The effects of financialisation and financial development on investment: Evidence from firm-level data in Europe

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The effects of financialisation and financial development on investment: Evidence from firm-level data in Europe

Daniele Tori and Özlem Onaran

Abstract

In this paper we estimate the effects of financialization on physical investment in selected western European countries using panel data based on the balance-sheets of publicly listed non-financial companies (NFCs) supplied by Worldscope for the period 1995-2015. We find robust evidence of an adverse effect of both financial payments (interests and dividends) and financial incomes on investment in fixed assets by the NFCs. This finding is robust for both the pool of all Western European firms and single country estimations. The negative impacts of financial incomes are non-linear with respect to the companies' size: financial incomes crowd-out investment in large companies, and have a positive effect on the investment of only small, relatively more credit-constrained companies. Moreover, we find that a higher degree of financial development is associated with a stronger negative effect of financial incomes on companies' investment. This finding challenges the common wisdom on 'finance-growth nexus'. Our findings support the 'financialization thesis' that the increasing orientation of the non-financial sector towards financial activities is ultimately leading to lower physical investment, hence to stagnant or fragile growth, as well as long term stagnation in productivity.

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1. Introduction

This paper estimates the effects of financialization on physical investment using panel data based on balance-sheets of non-financial publicly listed companies for the period of 1995-2015 in selected European countries.

Back in the 1950s Joan Robinson (1952:86) stated that "where enterprise leads finance follows", describing a financial system that was merely supporting trajectories already planned by the productive sector. In contrast, recent structural changes in the functioning of capitalism mark the growing prominence of the 'financial motives' over the traditional productive purposes. Instead of being just a vehicle for more efficient production plans, in the last decades the financial activities have grown disproportionately compared to the financing requirements of the rest of the economy. This new configuration raises the question of how this imbalance affected the investment processes in the non-financial sector.

The conventional literature asserts that financial markets facilitate the financing and the efficient allocation of investment (King and Levine, 1993; Gilchrist and Himmelberg, 1995; Beck et al., 2000; Love, 2003; Beck and Levine, 2004; Levine, 2005). However, Arestis and Demetriades (1997) warn against the robustness of these results based on cross-country evidence, which do not take into account the institutional peculiarities. Moreover, the effect of stock market development on growth is found to be weaker than that of the banking sector (Arestis et al., 2001). Recently after the 2007-2008 crisis, the disproportionate growth of the financial system has been questioned in some conventional contributions as well (see among others Cecchetti and Kharroubi, 2012; Beck et al., 2014; Law and Singh, 2014; Arcand et al., 2015). In particular, Law and Singh (2014) and Arcand et al. (2015) argue that there is a 'threshold effect' in the relationship between the extension of financial resources and growth; thus the expansion of the financial system is beneficial to growth only up to a point (e.g. the 'dimension' of the financial system should not exceed 100% of the GDP). Recently, a similar argument has been put forward by an IMF discussion note with respect to developing and emerging markets (Sahay et al., 2015), which argues that the impact of financial development on growth is 'bell-shaped': 'too much finance' is likely to increase both economic and financial instability. Further,

Cournède et al. (2015) analyzed five decades of data for highly developed countries as a part of an OECD study. They find that, for most of the countries, the expansion of credit by financial intermediaries to the economy has grown three times as fast as economic activity. They conclude that further development of the financial system is likely to be negative for growth.

In both the analysis of investment and financial development discussed above, non-financial companies' financial flows are not directly taken into account. Given the transformation of the economies towards a financialized stage in the last decades, the conventional models of investment may be mispecified due to their neglect of some important factors in the firms' financing and investment decision.

The Post-Keynesian literature on 'financialization' illustrates the negative impacts of expanding financial sector on the economic systems (Epstein, 2005), on income distribution and demand (Onaran et al., 2010; Hein, 2013; Kohler et al., 2016), and in particular on investment (Stockhammer, 2004, 2006; Orhagnazi, 2008a; Dallery, 2009; Cordonnier and Van de Velde, 2015). 'Financialisation' is a self-reinforcing socio-economic process, which manifests itself in the growing prominence of behaviours derived from the functioning of the financial sector. A similar argument can be found in the marxist literature, which demonstrate that the long-term trajectories of the market economies are gravitating more around the financial sector and less around the productive one (Foster, 2010). Since the 1980s, the slow down in investment and growth went along with a rise in the interest and dividend payments and share buybacks of the non-financial corporations (henceforth NFCs), which 'punctured' the value generated by NFCs (Duménil and Levy, 2004). Consequently, companies experienced a significant reduction in available funds for physical investments.[1]

Despite an expanding theoretical literature on the effects of financialization, the empirical evidence is predominantly relegated to a macro perspective, especially in the case of physical investment. The origins of the theoretical microeconomic analysis of the impact of finance on investment can be traced back to the seminal works of Fazzari and

[1] Some authors of the Marxian tradition (e.g. Lapavitsas, 2009; Kliman and Williams, 2014) also argue for a reversed causality, i.e. financialisation of the economy should be understood as a consequence, and not as a cause of the slowdown in the capital accumulation.

Mott (1986) and Ndikumana (1999). To the best of our knowledge, only Orhangazi (2008b) and Demir (2007, 2009) analyse directly the effects of financialization on accumulation from a microeconomic perspective.

This paper has three novelties: First, we provide a model of firm-level investment, which extends the Post-Keynesian model by Fazzari and Mott (1986) by integrating the effects of financial incomes as well as financial payments in a coherent fashion. Second, we provide the first micro-econometric evidence for a large sample of European NFCs (as well as single countries) on the effects of financialisation on investment using firm level balance sheet data from Worldscope database. This particular database allows us to build a consistent measure for companies' financial activities regarding both inflows and outflows. Third, we explore the interactions between increasing financial development (henceforth FD, defined conventionally as the financial market activities) and the effect of financial incomes on NFCs' investment.

The remainder of the report is organized as follows. Section 2 discusses the key theoretical and empirical contributions in the literature. Section 3 presents the alternative specifications of the investment functions to be estimated. Section 4 discusses the data and the stylized facts of our sample. Section 5 presents the estimation methodology. In section 6 we discuss our estimation results. Section 7 concludes.

2. Accumulation of fixed assets, liquidity, and financialisation

In the earlier 'accelerator investment models' (e.g. Kuh and Meyer, 1955; Evans, 1967) the capital expenditure was almost entirely explained by expected profitability measured by sales. In contrast, the early neoclassical approach modelled the firm's investment decision as a static maximization problem of discounted flows of profits over an infinite time horizon (Jorgenson, 1963; 1971). As an alternative, investment models, based on the maximization of the expected cash flows (or market value) in the presence of adjustment costs and expectations, which take the dynamic process explicitly into account, have been proposed (Chirinko, 1993). Within this group, the so-called 'Q model' of Brainard and Tobin (1968), which models investment using the Tobin's Q variable, defined as the ratio of the firm's stock market valuation to its capital replacement cost, has been widely used.

However, firm-level empirical analysis has failed to provide evidence of a strong explanatory power of the Q variable (Hayashi and Inoue, 1991; Bond et al., 1992). Possible mainstream explanations focused on the bias of the stock market evaluation due to asymmetric information (Stiglitz and Weiss, 1981) and periodic 'financial bubbles' (Bond and Cummins, 2001; Bond et al., 2004). But more importantly, as argued by Hubbard (1998), the source of financing matter for investment.

Empirical evidence shows that cash-flows, i.e. internal funds, are important determinants of investment (Fazzari et al., 1988; Blundell et al., 1992; Brown et al., 2009). In particular, the seminal contribution by Fazzari et al. (1988) shows that fluctuations in internal finance, as reflected by cash-flows, are statistically more important than the stock market evaluation in determining the level of accumulation. Liquidity constraints play a crucial role in determining investment (Fazzari and Petersen, 1993; Chirinko and Schaller, 1995; Kadapakkam et al., 1998). In addition, the empirical evidence shows that cash flow always has a signficant positive effect on accumulation, whilst the effects of the stock market evaluation and debt are mixed (Devereux and Schiantarelli, 1990; Bond and Meghir, 1994; Bond et al., 2003; Bloom et al., 2007). The mainstream investment literature argues that companies' financing issues mainly derive from agency problems, and the development of financial markets can relax these constraints (Devereux and Schiantarelli, 1990; Love, 2003; Pawlina and Renneboog, 2005; Love and Zicchino, 2006; Guariglia and Carpenter, 2008; Bond et al., 2003). In particular, Beck et al. (2005) find that firms with higher financing obstacles shows slower growth, but this relationship is weaker in countries with relatively more developed financial systems. In addition, these authors finds that FD is more effective in alleviating financing constraints especially for smaller firms. Nonetheless, according to their findings the effect of financial development on firms' growth is always-positive. However, while some studies find a significant and positive effect of FD on economic growth and investment (Levine, 2005; Arestis et al., 2015), both the statistical significance and size of the estimates vary widely due to methodological heterogeneity (Valickova et al., 2015).

In both the analysis of investment and financial development discussed above, companies' financial flows are not directly taken into account. As a result of the transformation of the economies towards a financialized stage in the last decades, the

conventional models of investment may be misspecified due to their neglect of some important factors in the firms' financing and investment decision.

The Post-Keynesian literature offers a more holistic approach to the analysis of the effect of financial markets on investment, where NFCs are far from passive players under the control of oversized financial markets. In addition to (or even partially substituting) physical investments, NFCs can readily accumulate financial assets. The Post-Keynesian literature conceives the firm as a 'battlefield' for different vested interests (Stockhammer, 2006).[2] The most visible type of internal conflict is reflected in shareholders' preference for short-term profitability, which undermines the accumulation of fixed capital (Dallery, 2009; Hein and van Treeck, 2008). There is a 'growth-profit trade-off' within the managerial decision-making process of firms (Lavoie, 2014). The increasing involvement of the NFCs in finance-related activities has to be understood primarily as a consequence of a change in the corporate governance (Lazonick and O'Sullivan, 2000). From the early 1980s onwards, there has been a legitimization of the rule of maximizing the 'shareholder value' (Rappaport, 1999). While the former imperative has been to 'retain and re-invest', under the shareholder rule, to 'downsize plants and distribute earnings' is paramount. The management has to please the shareholder's requests by distributing dividends and boosting share prices through share buyback operations (De Ridder, 2009). Furthermore, financialisation offers a fall back option to firms to invest in reversible short-term financial assets instead of irreversible long-term fixed assets, and thereby financial assets crowd out physical accumulation. This behavioural twist negatively affected the long-term investment plans.

As already said in the introduction, the vast majority of the empirical literature on the impacts of financialization on investment is based on a macroeconomic framework (Stockhammer, 2004; van Treek, 2008; Orhangazi, 2008a; Arestis et al., 2012). Regarding firm level effect of finance on investment, the seminal paper by Fazzari and Mott (1986) models the three key components of the Post-Keynesian theory of investment: a positive

[2] Milberg and Winkler (2009) argue that the accumulation-financialization link is blurred by the increase in off-shoring. This is not a problem in our case, since all our data are provided on a consolidated basis (parent company plus subsidiaries). Moreover, the non-operating dividend incomes come from financial activities.

effect of sales (as a proxy for capacity utilization), a positive and independent effect of internal finance, i.e. 'less expensive' retained earnings, and a negative impact of interest expenses.[3] In particular, they introduce a flow measure for interest payments to define a 'committed constraint' on the available cash flow. In another Post-Keynesian microeconomic investment model, Ndikumana (1999) finds negative effects of both stock and flows of debt. Firm's indebtedness not only reduces the cash flow (via interest payments), but also affects the sustainability of investments.

However, Fazzari and Mott (1986) and Ndikumana (1999) do not model the impact of financial revenues, which is an important dimension of financialisation. To the best of our knowledge, only three empirical papers explicitly analyse the financialization of the investment from a microeconomic perspective.

Demir (2009) analyse financialization in the NFCs in Argentina, Mexico, and Turkey in the 1990s. The author estimates accumulation as a function of a set of country specific control variables (risk and uncertainty measures, level of credit from the banking sector and the level of real GDP), and the gap between the rates of return of fixed and financial assets. With the latter variable, Demir captures the markets signals for future profitability of non-operating activities and the opportunity costs for fixed investment. With this choice, the expected growing profitability of financial investments (and thus an increase in financial income) will increasingly redirect available resources from fixed investment. Estimating the function using a GMM approach, the author finds that companies prefer to invest in 'reversible' short-term financial investment instead using funds for 'irreversible' long-term fixed investment plans. Increasing returns on financial assets reduces fixed investment spending of the industrial sector.

Orhangazi (2008b) proposes a microeconomic version of his macroeconomic analysis discussed in the previous section. The author analyses the effect of financialization on the investment behaviour of NFCs in the US, for the period of 1973-2003. Orhangazi explicitly takes into account the biunivocal aspect of financialization. He uses a specification in which, in addition to the traditional determinants of investment (namely the lagged levels of investments, sales, and operating income), financial incomes, financial payments, as well as

[3] This study by Fazzari and Mott provides a response to the mainstream critiques of the use of liquidity measures to model investment by Jorgenson (1971).

the debt level are the other explanatory variables. Using a difference GMM estimator, he finds a significant and negative effect of financial payments on capital accumulation. Moreover, the level of long-term debt has a statistically significant and negative effect on investment. With respect to the financial payments, the author theorizes a 'crowding-out' effect: higher profits from the financial involvements should drive a change in the priorities of the management. Firms would prefer short-term reversible financial investments rather than long-term fixed ones. Orhangazi finds that this effect differs with respect to the companies' sizes. In general, he concludes, "the nature of the relationship between financial markets and NFCs does not necessarily support productive investments. On the contrary, it might be creating impediments" (Orhangazi 2008b:883).

Finally, the recent paper by Davis (2016) looks at financialization of NFCs in the US using a descriptive analysis of the changes in their balance-sheet structures. The author finds a) a substantial increase of the financial assets/fixed assets ratio since the 1980s; b) an overall increase in NFCs' leverage; c) an increasing role of equity, and especially in the form of share buybacks. This increased financial orientation of US NFCs appears to be different with respect to firms' size, with smaller firms again being less involved in this process.

The evidence at a microeconomic level supports the thesis for which the increasing interconnections between the financial flows of NFCs and financial markets are likely to have an adverse impact on the dynamic of physical accumulation

Event though the available evidence depict financialization as a phenomenon common to almost all developing and developed economies, the different institutional settings at country or/and regional level reveal the presence of 'varieties of financialization' (Lapavitsas and Powell, 2013). More specifically, Karwowski and Stockhammer (2016) studied the effect of financialization in emerging countries (Asia, Africa, Emerging Europe, and Latin America) according to different measures (i.e. financial deregulation, foreign financial inflows, asset price volatility, bank-based vs. market-based finance, business debt, and household indebtedness). The authors find considerable variation in the depth and manifestation of financialization across the various emerging areas. One contribution of our paper is to analyse whether financialization had similar

effects on NFCs' investment in Europe to those found by previous studies in the case of the USA.

Building on the reviewed literature, in the next section we describe the specifications of different models of investment, all of which take explicitly into account the effects of financialization including both financial incomes and payments.

3. The theoretical model

Within the Post-Keynesian theory, capital accumulation is an intrinsically dynamic process (Kalecki, 1954; Lopez and Mott, 1999). Physical investment is an irreversible phenomenon. There is a path dependency that link past and future levels of accumulation, as also confirmed by the previous empirical literature. The inclusion of the lagged level of investment increases the explanatory power of our models. In fact, the accumulation of fixed assets is an intrinsically dynamic process. As we have seen in the previous discussion, the past level of investment is a fundamental determinant of the actual level of accumulation. Thus, the process of financing the investment plan overlaps in different time-periods, and there is a path dependency which link past and future levels of investment. Among others, Ford and Poret (1991)[4], Kopcke and Brauman (2001), Orhangazi (2008a, 2008b), and (Arestis et al., 2012) show the importance of the lagged accumulation in explaining its current value. Therefore, in all the models to be estimated, we include the lagged investment. Also all other explanatory variables are lagged in order to depict the 'adjustment processes'.

To analyse the potential effects of financialization, we enriched the basic version proposed by Fazzari and Mott (1986). Equation (1) presents our specification of 'financialized investment', where the rate of accumulation, I/K, is:

[4] Ford and Poret (1991) analysed the pattern of investment in OECD countries in the 1980s from a macroeconomic perspective. They studied the consistency between the time-series properties of investment, output, and cost of capital in order to assess the empirical validity of different underlying theories. They found that for most of the countries the best explanatory variable for current investment dynamic is its own past trend.

$$\left(\frac{I}{K}\right)_{it} = \beta_0 + \beta_1 \sum_{j=1}^{2}\left(\frac{I}{K}\right)_{it-j} + \beta_2 \sum_{j=1}^{2}\left(\frac{\pi - CD}{K}\right)_{it-j} + \beta_3 \sum_{j=1}^{2}\left(\frac{S}{K}\right)_{it-j} + \beta_4 \sum_{j=1}^{2}\left(\frac{\pi_F}{K}\right)_{it-j} + \beta_5 \sum_{j=1}^{2}\left(\frac{F}{K}\right)_{it-j} + \beta_6 \sum_{j=1}^{2}(Q)_{it-j} + \beta_t + \varepsilon_{it} \quad (1)$$

where I is the addition to fixed assets, K is the net capital stock, S is net sales, π is net operating income and CD is cash dividends paid, F is the sum of cash dividends and interest paid on debt, π_F is the total non-operating (financial) income as the sum of interest and dividends received by the company, and Q stands for Tobin's Q. We use the approximate average measure for Tobin's Q suggested by Chung and Pruitt (1994), who propose a compromise between "analytical precision and computational effort" (Chung and Pruitt, 1994:71). This method is based on the well-established procedure proposed by Lindenberg and Ross (1981).[5] Furthermore, i is the firm index, β_t identifies a set of time-dummies to control for unobservable time-specific effects common to all firms in the different estimations, whilst the standard disturbance term ε_{it} captures firm-specific fixed effects and idiosyncratic shocks. The operating income/fixed assets ratio is a measure of the profit rate, whilst the sales/fixed assets ratio is our measure of capacity utilization.[6] We also introduce the change in total debt/total assets ratio $\left(\frac{TA}{TD}\right)$ to control for the additional effect of indebtedness on investment.

All variables are lagged to reflect the time consideration in the investment plans. The net operating income/fixed assets ratio (retained earnings) is a measure of the after dividends profit rate, the sales/fixed assets ratio is a proxy reflecting capacity utilization, financial payments/fixed assets and non-operating income/ fixed assets are the two measures of the impact of financialization. Table 1A in the appendices contains variables' descriptions and codes. We expect positive effects of the lagged accumulation rate, profit

[5] See Table 1A in the Appendix for a detailed description of the variables. This measure is used also in Love and Zicchino (2006), who use the same database as in this paper.

[6] I.e. output/potential output $\frac{Y}{Y*}$ is equal to $\frac{\left(\frac{Y}{K}\right)}{\left(\frac{Y*}{K}\right)}$, where $\left(\frac{Y*}{K}\right)$ is potential output as a ratio to capital stock, which is a measure of technology. With constant technology in the short time period, time effects (which we control for) capture the technological change. Thus, $\frac{Y}{K}$ is often used as a measure of capacity utilization, in particular due to a lack of data for $Y*$.

rate, and sales on investment. In contrast, in the light of the macroeconomic and microeconomic Post-Keynesian literature, we expect the impact of total financial payments (or 'cash commitments') to be negative. In this model cash dividends are conceived both as a reduction of available internal funds, and as reflecting behavioural changes due to the 'shareholder value orientation' (henceforth SVO) as suggested by Lazonick and O'Sullivan (2000). The composite measure for outward financialization, *F,* which is the sum of interest and dividend payments (as a ratio to *K*), capturing a) the liquidity effect of interest payments, and b) the additional behavioural effect of the SVO. In brief, *F* reflects the financial outflows, while π_F reflects the financial inflows. Not only do NFCs use part of their funds to pay interest and dividend to the financial sector, but they can also more than before pursue non-operating financial investment themselves, thus receiving financial incomes. We include the sum of interests and dividends received by the NFCs (π_F) as a ratio to *K* as an additional explanatory variable[7]. Theoretically, the sign of the effect of financial incomes on investment is ambiguous. On the one hand, these incomes may have a positive impact on the accumulation of fixed assets by easing the liquidity constraint faced by firms. In particular, this can be the case for relatively smaller companies, which are more likely to experience liquidity restrictions compared to larger corporations. On the other hand, financial activities can also be detrimental to physical accumulation, since NFCs will be attracted by short-term, reversible financial investment, instead of engaging in long-term, irreversible physical investment. In order to explore the potential different effect of financial payments in small vs. large companies, we estimate an extended version of specification (1) as,

[7] Interest and dividends do not exhaust the spectrum of non-operating financial incomes of NFCs. In fact, Krippner (2005) shows how capital gains account for a considerable part of NFCs financial profits. However, as also recognised by Orhangazi (2008b) with respect to Compustat database, also in Worldscope data on NFCs' capital gains are not available.

$$\left(\frac{I}{K}\right)_{it} = \beta_0 + \beta_1 \sum_{j=1}^{2}\left(\frac{I}{K}\right)_{it-j} + \beta_2 \sum_{j=1}^{2}\left(\frac{\pi - CD}{K}\right)_{it-j} + \beta_{2.1} \sum_{j=1}^{2}\left[\left(\frac{\pi - CD}{K}\right) * D_n\right]_{it-j} + \beta_3 \sum_{j=1}^{2}\left(\frac{S}{K}\right)_{it-j} +$$
$$+ \beta_4 \sum_{j=1}^{2}\left(\frac{\pi_F}{K}\right)_{it-j} + \beta_{4.1} \sum_{j=1}^{2}\left[\left(\frac{\pi_F}{K}\right) * D_n\right]_{it-j} + \beta_5 \sum_{j=1}^{2}\left(\frac{F}{K}\right)_{it-j} \quad (2)$$
$$+ \beta_{5.1} \sum_{j=1}^{2}\left[\left(\frac{F}{K}\right) * D_n\right]_{it-j} + \beta_1 \sum_{j=1}^{2}\left(\frac{TD}{TA}\right)_{it-j} + +\beta_6 \sum_{j=1}^{2}(Q)_{it-j} + \beta_t + \varepsilon_{it}$$

where the dummy variable D_n takes the value 1 if the average total assets of company *i* lies in the lower *n* percentile of the distribution, and takes the value 0 otherwise. In our estimations, this size-dummy is interacted with the financial incomes variable, as well as with other explanatory variables included in the above specification (the rationale of the dummy is the same). In this specification, while β_4 is the effect of financial incomes (or other variables) in larger companies, $\beta_4 + \beta_{4.1}$ capture the effect of financial incomes (or other variables) in smaller companies.

In addition, the effect of financial incomes on NFCs rate of accumulation can differ depending on the degree of FD of the country in which the NFCs are based. In this paper, we analyse the relationship between the development of the financial system and physical investment by estimating the impact of NFCs financial incomes on investment at different levels of financial development. The financial system acts as a provider of long-term liquidity to finance investment but, when its size and development is detached from the requirements of the real-sector, a perverse effect may emerge. In fact, NFCs may take advantage of a growing and developing financial system to engage even more in non-operating financial activities, causing a strong negative effect on their core capital accumulation. To explore this additional effect we estimate equation (3) in which we interact our variable for financial incomes $\left(\frac{\pi_F}{K}\right)$ with the dummy variable D_{LFD}. The latter takes the value 1 if company *i* is located in a country with relatively low level of FD, and takes value 0 otherwise (i.e. if company *i* is located in a country with higher level of FD).

$$\left(\frac{I}{K}\right)_{it} = \beta_0 + \beta_1 \sum_{j=1}^{2}\left(\frac{I}{K}\right)_{it-j} + \beta_2 \sum_{j=1}^{2}\left(\frac{\pi - CD}{K}\right)_{it-j} + \beta_{2.1} \sum_{j=1}^{2}\left[\left(\frac{\pi - CD}{K}\right) * D_{nLFD}\right]_{it-j}$$
$$+ \beta_3 \sum_{j=1}^{2}\left(\frac{S}{K}\right)_{it-j} +$$
$$+ \beta_4 \sum_{j=1}^{2}\left(\frac{\pi_F}{K}\right)_{it-j} + \beta_{4.1} \sum_{j=1}^{2}\left[\left(\frac{\pi_F}{K}\right) * D_{LFD}\right]_{it-j} + \beta_5 \sum_{j=1}^{2}\left(\frac{F}{K}\right)_{it-j}$$
$$+ \beta_{5.1} \sum_{j=1}^{2}\left[\left(\frac{F}{K}\right) * D_{LFD}\right]_{it-j}$$
$$+ \beta_6 \sum_{j=1}^{2}\left(\frac{TA}{TD}\right)_{it-j} + \beta_{6.1} \sum_{j=1}^{2}\left[\left(\frac{TA}{TD}\right) * D_{LFD}\right]_{it-j} + \beta_7 \sum_{j=1}^{2}(Q)_{it-j} + \beta_t$$
$$+ \varepsilon_{it}$$

In order to split our sample into countries with low and high financial development, we refer to the traditional index proposed by Demirgüc-Kunt and Levine (1996) also used in Love and Zicchino (2006) among others. Even though more disaggregated indexes have been introduced (see Beck et al., 2010), we opted for the traditional version for two reasons: first, this index is more parsimonious and help us in interpreting the results. Second, in line with the aim of this study, we are interested in taking into account the 'depth' of the financial sector. Although important, the efficiency and stability of the financial system used in other indexes are less relevant categories in this respect. The FD index is the sum of Index 1 and Findex 1 from Demirguc-Kunt and Levine (1996). Index 1 summarizes the stock market development and is the sum of (standardized indices of) market capitalization to GDP, total value traded to GDP, and turnover (i.e. total value traded/market capitalization). Findex1 account for the financial intermediary development and is the sum of (standardized indices of) ratio of liquid liabilities to GDP (i.e. M3/GDP), and ratio of domestic credit to private sector to GDP.[8] If a country has a FD index above

[8] These indexes are computed by using a simple standardization formula. The means-removed value of variable X for country j is equal to $X_j^m = \frac{X_j - mean(X)}{|mean(X)|}$, where the term in the denominator represent the absolute average value across countries in the sample for the period considered. Data about the other steps of FD index computation are available upon request.

(below) the median, it will be considered to have a high-developed (low-developed) financial system.[9]

The fourth and last specification that will be estimated is an integration of equation (2) and (3). The effects of financial incomes and financial payments are interacted with both the size-dummy and FD-dummy.

$$\left(\frac{I}{K}\right)_{it} = \beta_0 + \beta_1 \sum_{j=1}^{2}\left(\frac{I}{K}\right)_{it-j} + \beta_2 \sum_{j=1}^{2}\left(\frac{\pi - CD}{K}\right)_{it-j} + \beta_{2.1} \sum_{j=1}^{2}\left[\left(\frac{\pi - CD}{K}\right) * D_{nLFD}\right]_{it-j} + \beta_3 \sum_{j=1}^{2}\left(\frac{S}{K}\right)_{it-j} + \\ + \beta_4 \sum_{j=1}^{2}\left(\frac{\pi_F}{K}\right)_{it-j} + \beta_{4.1} \sum_{j=1}^{2}\left[\left(\frac{\pi_F}{K}\right) * D_{LFD}\right]_{it-j} + \beta_{4.2} \sum_{j=1}^{2}\left[\left(\frac{\pi_F}{K}\right) * D_{20}\right]_{it-j} + \beta_5 \sum_{j=1}^{2}\left(\frac{F}{K}\right)_{it-j} \\ + \beta_{5.1} \sum_{j=1}^{2}\left[\left(\frac{F}{K}\right) * D_{LFD}\right]_{it-j} + \beta_{5.2} \sum_{j=1}^{2}\left[\left(\frac{F}{K}\right) * D_{20}\right]_{it-j} + \beta_6 \sum_{j=1}^{2}\left(\frac{TA}{TD}\right)_{it-j} + \beta_{6.1} \sum_{j=1}^{2}\left[\left(\frac{TA}{TD}\right) * D_{LFD}\right. \\ + \beta_7 \sum_{j=1}^{2}(Q)_{it-j} + \beta_t + \varepsilon_{it} \qquad (4$$

For simplicity, the effect of operating income and debt are interacted with just the FD-dummy.[10] This specification allows us to estimate consistently the impact of our variables in different context.

At this point of the discussion, a clarification about how to interpret the different effects is needed. As for the computation of the size effect in equation (2), the true effect of explanatory variable 'x' will be equal to the sum of the interacted and the non-interacted coefficient. The discussion is a bit more complex when more than one interaction for the same variable is included in the specification. Taking financial income as an example, the estimated coefficient β_4 will correspond to the effect of this variable for companies lying in the top 80% of the distribution in terms of total assets, which also are in country with high

[9] We could have also tested a specification in which Index1 and Findex1 were inserted separately, with two correspondent interaction dummies. This could have helped in testing the different impact of financialization within the so-called 'bank based' vs. 'market-based' economic systems. However, as shown in Botta et al. (2016), this dichotomy is not useful when a financial system with a heavy presence of shadow-banking is taken into account.

[10] In addition, since Total Assets already divide the debt variable, an additional interaction again based upon the distribution of average Total Assets would create collinearity problems in our estimation.

FD. The estimated coefficient $\beta_{4.1}$ will be the effect of financial incomes in the companies in the top 80% of the size distribution but based in countries with low FD. Furthermore, coefficient $\beta_{4.2}$ will reveal the effect of this variable in relatively smaller companies (the low 20% of the size distribution), irrespective of their location in terms of FD. The remaining two effects are computed as follows. The impact of financial incomes in companies in the low 20% of the size distribution in countries with high FD will be equal to $\beta_4 + \beta_{4.2}$. The result of $\beta_4 + \beta_{4.2}$ will be the effect of financial incomes in relatively smaller companies based in countries with low FD. The same logic applies to financial payments. Furthermore, the effect of operating income in companies based in country with low FD will be equal to $\beta_2 + \beta_{2.1}$; the effect of change in debt in companies based in country with low FD will be equal to $\beta_6 + \beta_{6.1}$. When the two effect to be summed up have a different sign, the can end up being statistically equal to zero. To check for this we apply a Wald test to the summation of the effects coming from the sum of the different coefficients described above. If the p-value of the test is higher than 10%, this means that the sum in not statistically different from zero. In this case, the effect of the interaction is simply zero

With equations (1), (2), (3), and (4) we aim at introducing full models of firm-level investment that are coherent with the Post-Keynesian tradition of investment analysis, and that a) takes into account the inherent irreversibility of physical investment, b) controls for the independent effect of profitability and demand, c) highlights the effects of financial relations, d) makes a clear distinction between operating and non-operating activities, and e) treats financial outflows and inflows, i.e. both outward and inward financialization, as fundamental determinants.[11] These models aim at capturing two of the potential impacts of financialization. As we argued before, financial income can have both positive and negative effects on physical investment. Hence, the expected sign of the coefficient of financial income is ambiguous. This dual feature of financial non-operating income can differ according to the company size, as well as to the overall development of the financial system in which the company operates. On the contrary, we expect financial payments to have a negative effect, since they represent a reduction in firms' internal funds available for

[11] We also extended the model with total debt/fixed capital, and change in or the square of this ratio, but we did not find any statistically significant effects. Results are available upon request. An extended model with share buybacks was not feasible due to lack of data.

investment due to the payments of interest on debt and dividends to shareholders. This variable summarizes the effect of the increase in external means of financing, as well as the strength of the 'shareholder value orientation' discussed earlier. As confirmed by theory and previous empirical evidence, we expect a positive and significant effects of internal finance and sales.

4. Data and stylized facts

Our sample consists of the following western European countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden, and the UK.[12] We extracted our data from the Worldscope database of publicly listed firm's balance sheets, which contains standardized accounting information about not only investment, sales, profits, interest, and dividend payments but also companies' financial incomes. Standardized data on financial payments and, in particular, financial incomes are difficult to find; our database allows us to have a comprehensive variable for our analysis. Worldscope database has been acknowledged as a valuable source in the literature on firm-level investment analysis (e.g. Cleary 1999; Pawlina and Renneboog, 2005; Love, 2003; Love and Zicchino, 2006). Our data are annual for the period of 1995-2015.

It is well known that the presence of outliers usually characterizes firm-level data. To prevent biased estimations, we apply a data screening process, by excluding extreme outlier observations from the sample.[13] First, we select firms that have at least three consecutive observations for the dependent variable (I/K), which is also required for econometric purposes (see Roodman, 2009). Second, we exclude companies with rate of accumulation (I/K) higher than 2.5, representing a growth rate of capital stock higher than 250%. Third, we drop all the companies with a permanent negative mean operating income for the whole period. Finally, we exclude observations in the upper and lower 1% of each variable's distribution. With these adjustments, we finally have data for a total number of 25726 observations and 2881 publicly listed non-financial companies in Western Europe.

[12] Given restricted data availability for the NFCs in Luxembourg, we decided to exclude this country from the analysis.

[13] Guariglia and Carpenter (2008), Love and Zichino (2006), Chirinko et al. (1999) and Orhangazi (2008b) follow similar strategies to define and exclude the outliers.

Table 1A in the appendix summarize the definitions and codes of the variables employed. Furthermore, Tables 2A to 6A in the appendix show more specific descriptive statistics and coverage of our sample. Next, we present the stylized facts of our sample for Europe, and for the single selected countries.

Figure 1 shows the trends in the additions to fixed assets as a ratio to operating income in both the European aggregate as a whole and selected economies. A common feature of the last twenty years has been a reduction in the reinvestment of profit of NFCs in the majority of the countries between 1995 and 2015. Overall, the slowdown in investment has been remarkable in Europe, with a 32% decline in the re-investment rate on average, where NFCs are investing about 33% of their profits as of 2015; this ratio was 50% in 1995. The highest fall is in Sweden (-49%), the UK (-32%), and Italy (-28%).

<Figure1 here>

<Figure 2 here>

One common finding in the financialization literature is that NFCs have been engaging in non-operating activities, i.e. accumulating financial assets, to an increasing extent. As can be seen in Figure 2, in general the ratio of financial assets to fixed assets clearly increased albeit with some differences: on average in Europe, the ratio increased by 93%; as of 2015 NFCs financial assets are 3.3 times their fixed assets in Europe. The UK and Germany experienced the strongest rise in this ratio (423%, 324%, and 285% respectively). To summarize, this preliminary descriptive analysis suggest that, in general, NFCs diverted funds from real investment towards the accumulation of non-operating financial assets.

In figure 3, changes in the rate of reinvestment is plotted against the accumulation of financial assets from 1995 to 2008 all 14 countries[14]. There is considerable heterogeneity among countries. On the one hand, despite growing financial assets, in some countries the NFCs' rate of reinvestment did not decline significantly (Belgium, Austria,

[14] We exclude the years after the Great recession such that our analysis is not biased by the extreme changes after the crisis.

Greece, and Spain). On the other hand, NFCs in countries like France, Finland, Germany, the UK, Ireland, and especially Sweden, experience a clearer negative relationship between these two measures. The inverted U-shaped fitted line in Figure 3 indicates that the negative relationship between NFCs' investment and financialization (here merely conceived as accumulation of financial assets) could be non-linear.

<Figure 3 here>

Focusing on the aggregate European sample, Figure 4 shows that during 1995-2015 the NFCs' rate of accumulation (I/K) has been stagnant around an average value of 24%. At the same time, NFCs' financial payments (dividends plus interests as a ratio to fixed assets) have been increasing significantly. There is also a sharp increase in the level of non-operating incomes (as a ratio to fixed assets) before the crisis (173%). The 2007-8 crisis has led to a reversal in the NFCs' financial incomes, although they are slowly recovering towards the levels of the early 2000s. Figures 5 to 18 show the relationship between the rate of accumulation of physical capital and our two measures of financialization - financial payments and incomes as a ratio to total assets - to analyse the double-sided impact of financialization.

<Figure 4 here>

In the UK (figure 5), the rate of accumulation has remained stagnant around an average of 25% for the whole period, and the reinvested profits declined. In sharp contrast, the stock of financial assets increased substantially, reaching 3.6 times higher than fixed assets in 2015. This substantial involvement in the accumulation of financial assets resulted in increasing non-operating income for the NFCs until the 2007-2008 crisis. Financial payments of the NFCs in the form of interests on debt and dividends paid to the shareholders also increased substantially since the mid-1990s, partially recovering from a decline during the crisis period.

In France (figure 6) the rate of accumulation of NFCs remained stagnant around 31%. In contrast, in the last twenty years financial payments increased substantially,

reaching 33% of fixed assets. Also financial incomes increase, peaking in 2008 when they reached 4% as a ratio to fixed assets. After the crisis, these incomes stabilized around the levels of the mid-1990s.

< Figures 5 to 10 here >

In Germany, NFCs experience decreasing rate of accumulation, which dropped by 50% in the period considered (figure 7). At the same time, financial payments increased by almost 80%, without being seriously affected by the crisis. As the NFCs in the UK and France, also in Germany corporations have seen their financial incomes increasing before the crisis, here peaking in 2007 at a value of 8% as a ratio to fixed assets.

NFCs in Italy also experience a declining rate of accumulation (by 30%), along with an increase in financial payments, although the trend in the latter is relatively modest in comparison to other countries (figure 8). Financial incomes reached the highest value in 2002 (3.3% of fixed assets) and after that stabilized around 2%, without being much affected by the crisis.

In Spain, NFCs' rate of accumulation stagnated around 0.18, slightly declining in the last twenty years (-7%). Financial payments increased particularly in the mid-2000s and, almost unaffected by the economic downturn, they stabilized at a value of 40% as a ratio to fixed assets (figure 9). Financial incomes had a volatile trend, increasing by 19% in the full period.

Swedish NFCs appear to be the most severely involved in the process of financialization (figure 10). Along with a stagnant average rate of accumulation of 29% (and a decreasing rate of re-investment), accumulated financial assets are more than 5 times the fixed assets in its peak. Also financial payments increased substantially and, after a decrease in 2008, fully recovered stabilizing around a value of 100% as a ratio to fixed assets. Financial incomes have a trend similar to the one of financial payments, although after the 2007-8 crisis the former normalized around 7% as a ratio to fixed assets. Nonetheless, this represents one of the highest value across the European economies.

In the Netherlands (figure 11), the rate of accumulation of NFCs on average declined from 25% in 1995 to 16% in 2015. In the same period, the ratio of financial payments to fixed assets increased substantially, reaching the maximum value in 2013 (0.59). Financial incomes more than doubled, peaking in 2008, before going back to values closer to the ones in the early 1990s after the 2008 crisis.

In Ireland (figure 12), the rate of accumulation of the NFCs has been overall stagnant, declining to 16% in 2013 and recovering slightly during 2014-15. The ratio of financial payments to total fixed assets increased considerably reaching 45% in 2015, whilst financial payments have been characterized by a volatile cycle in the first half of the period and stabilized at lower values after the crisis.

Also in Finland NFCs experience a stagnant rate of accumulation around an average value of 27% (figure 13). In the meantime, financial payments increased substantially from 16% to 80% of the fixed assets in the period considered. Financial incomes decreased from 1995 to the 2008 crisis and started to recover after 2010 reaching 4% of fixed assets.

In Greece (figure 14), NFCs show the most peculiar trends with respect to the three variables analyzed. From 1995 to 2013 the rate of accumulation declined from 21% to 7%, (albeit recovering in the last three years). Financial payments declined from 31% to 21% of fixed assets. Financial incomes show a declining trend as well from a very high value as a ratio to fixed assets, namely 12%, to 3.5% in 2013 (with a partial recovery in the last two years).

< Figures 11 to 18 here >

In Denmark (figure 15), the average rate of accumulation of NFCs has been around 22% during 1995-2015. Financial payments show a steep increase before the 2008 crisis, and after a downturn, a full recovery to pre-crisis values (44%). Financial incomes appear to be very volatile, have been decreasing before the crisis, and have started to recover since 2012.

In Portugal (figure 16), NFCs' rate of accumulation remained stagnant around a low average value of 15%. In contrast to this, the two financialization variables shows, on

average, a clear increasing trend: in the period considered, financial payments increased from 13% to 30% of fixed assets, whilst financial incomes reached 6% of fixed assets in 2013.

NFCs in Belgium show a decreasing rate of accumulation from 21.4% to 12.5%. Both financial payments and financial incomes appear to have been very volatile in the period considered, with the former showing very high values (only partially comparable to what was described for Sweden, see figure 10). Financial incomes increased substantially before the crisis and then stabilized around 3% of fixed assets.

Also in Austria NFCs had very volatile trends in both financial payments and incomes. On average, financial payments increased from 13% to 50%, whilst financial incomes remained around a value of 1.7% of fixed assets. In parallel with the other countries, the rate of accumulation shows a flat trend around 22%.

The last part of this section presents the degree of financial development (FD), based on a widely used index computed for the 14 countries analyzed. The FD index is a combination of standardized measures of five components, namely market capitalization as a ratio to GDP, total value traded as a ratio to GDP, total value traded as a ratio to market capitalization, ratio of liquid liabilities to GDP, and credit to the private sector as a ratio to GDP.[15] The source of these variables is the Global Financial Development Database (GFDD) of the World Bank. We split the European countries into two groups, to which we refer as countries with 'high' and 'low' FD, according to their median FD value from 1995 to 2007, excluding the years after the financial crisis. Figure 19 below shows the values of FD index for the countries included in our analysis.[16]

The countries with relative highly developed financial systems are the UK, Spain, Sweden, Germany, the Netherlands, and France; countries with relatively low levels of financial development are Ireland, Denmark, Portugal, Italy, Belgium, Austria, and Greece.[17]

[15] One of the limitations of this index is that it does not take into account NFCs' corporate bonds issuance.
[16] Tables 5A and 6A in the appendix provide additional information about this measure and values by year.
[17] It has to be noted that the classification described above is relative, and conditional on both the standardization process and the average level of FD computed among the countries included in the sample.

<Figure 19 here>

To summarize, the stylized facts hint at a) stagnant or declining rates of accumulation, b) declining rates of reinvestment of profits, c) an increase in the overall degree of financialization in terms of financial assets, financial incomes as well as financial payments both in the European aggregate as well as in the majority of the economies, d) the presence of non-linearity with respect to the relationship between the level of financialization and investment and e) some heterogeneity among countries. These stylized facts suggest an overall negative relationship between the rate of accumulation and the non-operating financial activities of NFCs, which will be investigated further via econometric estimations.

5. Estimation methodology

The four specifications presented in Section 3 are estimated using a dynamic panel-data model including the lag of the accumulation rate as explanatory variables. As explained in section 3, we treat investment as an intrinsically dynamic phenomenon.

In dynamic panel data models, the unobserved panel-level effects are correlated with the lagged dependent variables. Therefore, standard estimators (e.g. Ordinary or Generalized Least Squares) would be inconsistent. Therefore, we estimate our models using a difference-GMM estimator (Arellano and Bond, 1991). This methodology is suitable for analyses based on a 'small time/large observations' sample.[i] GMM is a powerful estimator for analyses based on firm-level data mainly for three reasons (Roodman, 2009). First, GMM is one of the best techniques to control for all sources of endogeneity between the dependent and explanatory variables, by using internal instruments, namely the lagged levels of the explanatory variables, which allows us to address dual causality, if rising financial payments and incomes is also a consequence of the slowdown in the capital accumulation. The instrument set consists of instruments that are not correlated with the first difference of the error term, but correlated with the variable we are estimating.

Second, by first-differencing variables, this estimator eliminates companies' unobservable fixed effects. Third, GMM can address autocorrelation problems.

The final estimates come from the combination of instruments and a vector of parameters that shows the minimum correlation between the error term and the instruments. We perform three types of tests on the estimation results. Firstly, we apply the Arellano-Bond test for second-order serial correlation (Arellano and Bond, 1991) which tests for the presence of autocorrelation in the residuals. Secondly, we verify the validity of the instruments set through the Hansen test (Hansen, 1982) which takes the orthogonality between instruments and regressions' residuals as the indicator of consistency between estimated and sample moments.[18] Thirdly, we incorporate time effects to account for shocks that are common to all firms in a specific year, and test the joint significance of the time dummies by using a Wald test.

We apply two tests to assess the appropriateness of the instrument sets, and lag structures. First, we check for second-order serial correlation with the Arellano-Bond test (Arellano and Bond, 1991). Second, we verify the validity of the instruments sets through the Hansen test.[19] In all models, the lagged dependent variable enters the instrument set as endogenous while all other explanatory variables enter as predetermined regressors. Consistently, the instrument sets include the second and third lags of the lagged dependent variable, and the first and second lags of the other lagged explanatory variables. We test the joint significance of the time dummies, and the consistency of the interaction dummies on financial incomes using a Wald test.

[18] As argued by Roodman (2009), Hansen's-J test is preferred to the usual Sargan test when we allow for the presence of heteroscedasticity in the error terms (i.e. errors are non-spherical). The Sargan test is a special case of Hansen test when we assume homoscedastic errors. However, the Hansen test (similar to the Sargan test) is sensitive to the total number of instruments. To control for this effect, we will check also the validity of the "difference-in-Hansen test" which control for the validity of the instruments set excluding groups. In addition, we performed robustness checks by reducing (collapsing) the number of total instruments. Overall, we defined models with the ratio between instruments and observations not exceeding 10 per cent.

[19] Hansen test takes the orthogonality between instruments and regressions' residuals as the indicator of consistency between estimated and sample moments. We tested and confirmed the presence of heteroscedasticity in our sample by using the White/Koenker and the Breusch-Pagan/Godfrey/Cook-Weisberg tests. Hansen's-J test is preferred to the Sargan test in the presence of heteroscedasticity (Roodman, 2009). However, the Hansen test (as the Sargan test) is sensitive to the total number of instruments. Therefore, we use only the first and second lags of our variables as instruments. Furthermore, all instruments are 'collapsed', thus having an instrument for each variable and lag distance.

All the variables are in logarithmic form to allow for non-linear relationships between the dependent and the explanatory variables. Furthermore, the logarithmic scale enables us to reduce the disturbances coming from the presence of heteroscedasticity. Robust standard errors are calculated through a two-step procedure after a finite-sample correction (Windmeijer, 2005).

All the estimations come from weighted regression, with the weights equal to 1 over the available observations for a specific country. This procedure mitigates the bias in the results coming from the highest data availability for core countries. Finally, we applied a general-to-specific estimation procedure, thus dropping from the specification the explanatory variable with the highest level of statistical insignificance at each step until we arrive at a specification with only significant variables. By doing this we get to the most parsimonious lag structures for different specifications.

6. Estimation results

This section presents our estimation results based on the four equations discussed in Section 3. We perform a dynamic panel-data analysis using firm-level balance sheet data from the Worldscope database supplied by Thomson Reuters. Using the Generalized Methods of Moments, we test the relative importance of traditional explanatory variables such as operating income, sales, and stock market evaluation in determining the investment rate. In addition, we propose an extended model of investment taking into account companies' non-operating activities, namely financial incomes and payments to the financial markets, as well as quantifying the impact of financial development.

First, we discuss our basic findings both at the aggregate and at country level. Second, we focus on our findings when the degree of financial development is included as a macroeconomic 'control' variable. Third, we present the economic significance of the effects of financialization on investment in each country. Finally, we provide a brief comparison with the available evidence in the literature.

The effect of financialization on investment in Europe

Table 1 presents the estimation results for the aggregate pool of all the 14 European countries based on equation (1). As can be seen in column 1, the lagged level of accumulation, sales, and net operating profit have positive effects on investment, as expected. Aggregated financial payments (dividends and interest) have a significant and negative effect on the rate of accumulation. The impact of non-operating financial incomes (π_F/K) on investment is also negative and significant. The change in the level of indebtedness has an additional negative effect on investment. These results are robust to the inclusion of Tobin's Q as an additional control variable, which has the expected positive sign. The results indicate that financialization has negatively affected NFCs' capital accumulation in Europe. The results are consistent with previous research showing that there is a negative impact of financialization on investment in both the US and developing countries (e.g. Orhangazi, 2008b; Demir, 2007, 2009). Column 2 presents the results for the same specification, but for the sample until the 2007 crisis, as a further check. Overall, the results are robust, with an increase in the negative effect of financial payments (F/K). However, the variable measuring internal funds (π-CD) is now insignificant.

As already discussed, theoretically the sign of the effect of non-operating income on physical accumulation is ambiguous. On the one hand, relatively smaller companies may use this additional source of income to partially ease liquidity constraints. On the other hand, the larger and more flexible non-financial companies may see short-term and reversible financial investment as an attractive alternative to physical investment. This choice may then come at the expense of long-term physical investment, and thus has an adverse effect on the rate of accumulation of these large corporations. We explored this possible dual, non-linear effect, by including an interaction dummy variable to account for the potentially different effect of financial incomes with respect to the size of the company (in terms of total assets). In these alternative specifications as described in Equation (2) in Section 3.3, the coefficient associated with the variable π_F/K show the effect of companies in the different top percentiles of the distribution. To compute the elasticity for the remaining companies we sum the coefficient for $(\pi_F/K)*D_n$ with the coefficient for π_F/K, and then check for statistical significance of the new measure with a Wald test.

<Table 1 here>

The evidence suggests that negative impacts of financial incomes are non-linear with respect to the companies' size. In Column 3 of Table 1, we present the results for the specification including of a dummy that is 0 if the company lies in the top 80% and 1 if it is in the lowest 20% of the distribution in terms of total assets. There is a statistically significant difference between the large and small companies with respect to the impact of financial incomes. In particular, top 80% of the companies in terms of size experience a strong negative effect of financial incomes (-0.12), while the firms in the lowest 20% of the sample, the effect is positive (0.16). On the contrary, the negative effect of financial payments is stronger in relatively smaller firms (-0.19 vs. -0.05). Financial incomes crowd-out physical investment for the top 80% of the companies whilst smaller companies' investments suffer more from financial payments. Given these results, we can conclude that financial incomes are negatively affecting NFCs' rate of accumulation in Europe, although there is a positive effect for relatively smaller companies.

In Table 1a, we present the estimation results based on equation (1) for selected countries, for which the number of firms is large enough to apply our estimation methodology.[20] We kept the specification including Tobin's Q whenever it was significant. As expected there is a positive effect of lagged rate of accumulation, sales and retained earnings (although the latter effect is not statistically robust for each country).

<Table 1a and 1b here>

[20] The choice of the selected countries has been informed by data availability. In fact, the dynamic GMM estimator suffer from small sample bias, thus requires a substantial number of cross sections, and estimation based on relatively low number of observations (or groups) do not satisfy the conditions for these estimators to be applicable, which makes country specific estimations for small countries only indicative. In Table 3a we provide information about the percentage of total companies in the low 20% and top 30% of the total assets distribution by country (see columns *e* and *f*). Even though smaller companies are underrepresented, the share of companies in these two groups is similar across countries (with the partial exception of Spain where the difference in the share of NFCs in the low 20% and in the top 30% is around 22%).

The negative crowding-out effect of financial incomes is a robust significant finding in all countries. Even though a straight comparison between estimates maybe statistically distorted, we find the strongest negative effect of non-operating income in the NFCs in Sweden and France (-0.17 and -0.13 respectively). Our other financialization variable, i.e. financial payments have a negative effect on NFCs' investment in all countries apart from Italy and Sweden, where we did not find a significant effect. Overall, these single country estimations confirm our previous findings of a negative impact of both financial incomes and payments on NFCs' rate of accumulation based on the pool of all western European firms. In addition, at the aggregate level the negative effect of financial incomes is common to countries with different levels of FD.[21]

Table 1b presents the results for estimations based on equation (1) for countries with a small number of publicly listed companies. Given the small number of firms, we report these results as indicative. As before, the effect of profitability on NFCs investment is not robust across countries. In contrast, sales has a consistent, positive effect on accumulation, which is also significant in most cases. The effect of financial incomes on investment is negative and significant for Austria, Ireland, and the Netherlands. In particular, Austria and Ireland have the highest negative elasticities. With respect to financial payments, the estimated effect is overall negative, with the exception of Austria, Belgium, and Greece. The strongest negative effect of financial payments is in Ireland and Portugal.

Financial development and financialized investment in Europe

Table 2 presents the results based on equations (3) and (4)[22]. With these estimations, we aim at the effect of the development of the financial system on European NFCs' physical investment. As we have seen before, the conventional argument within this literature is

[21] For a deeper analysis of the effect of financialization on the UK NFCs' investment, see Tori and Onaran (2015). For additional evidence for the US and emerging economies, see Tori and Onaran (2016).

[22] Weighted regression (w=1/total country obs.). I and II specifications based on Equation (3), III and IV specifications based on Equation (4), two-step difference-GMM estimations. Coefficients for the year dummies are not reported. Robust corrected standard error in parenthesis. ***** significant at 10%, ****** significant ant 5%, ******* significant at 1%

that FD has a general positive effect on economic growth. In particular, the conventional arguments suggests that FD is good for companies' investment given an enhanced allocation of resources (Levine, 2005) and reduced cash-flow constraints (Love and Zicchino, 2006). However, to the best of our knowledge, none of the available literature takes into account the novel features of NFCs' investment behaviour, i.e. the impacts of their growing non-operational financial activities.

Column 1 of Table 2 shows the results for specification (3) for the European pool. Here we interacted NFCs' financial incomes (π_F/K) with a dummy that takes value 1 if company *i* is based in a country characterized by a low FD index, and zero otherwise. In order to better characterize our specification, we interacted also retained earnings, financial payments, and change in total debt with the same dummy, and the interpretation is the same.

Similar to the results presented in Table 1, the positive effects of the lagged rate of accumulation, sales, and retained earnings are confirmed. In addition, we find that the effect of retained earnings is significantly stronger in companies operating in an environment with relatively low financial development (0.59 vs. 0.04). This confirms the previous findings on the positive effect of FD in easing NFCs' financing constraint (see especially Love, 2003 and Love and Zicchino, 2006).

<Table 2 here>

With respect to the effect of financial incomes, we find that for companies based in countries with high FD the effect is highly negative (-0.27). On the contrary, a lower degree of FD is associated with a positive, yet small, effect of financial incomes on investment (0.08).

In addition, the negative effect of financial payments on NFCs' accumulation is more than triple in less financially developed, i.e. more financially constrained, countries (-0.22 vs. -0.07). In addition, companies in countries with lower FD experienced a stronger negative effect of indebtedness (-0.09 vs. -0.02).

Column 2 of Table 2 shows the results for the same estimation for the period of 1995-2007. Even though the sign of the various effects is the same, the positive effect of financial incomes for companies in countries with low FD is higher with respect to the full period (0.12 vs. 0.04). In addition, in the period prior to the crisis, the increase in total debt had a small positive effect on the investment of these companies (0.03).

Column 3 of Table 2 presents the results obtained by estimating equation (4). In this case, we introduce both the size-dummies and FD-dummies, to test for the differences in the impact of financial incomes with respect to size of the companies in the context of different levels of FD. The signs of the lagged dependent variable and sales are consistent with what was discussed before. Operating income had a small positive effect for companies in countries with high FD, whilst its effect is larger for companies in countries with low FD.

This can be seen a further confirmation of the highest financial constraint experienced by companies based in an environment with less developed provisions of financial services. Interestingly, when disaggregating by size and level of FD at the same time a) the effect of financial incomes on investment is negative in both large and small companies in countries with high FD, and b) the effect is positive for both small and large companies in countries with low FD; however, the size of the positive effect for large companies is close to zero.

With respect to financial payments, the estimated effect on investment is significant and negative only for large companies, both in countries with low or high levels of FD. In the small companies in both country groups the effect is statistically insignificant; i.e. small companies seem not to suffer from the SVO and from the potential negative impact of the cost of capital.

As before, Column 4 of Table 2 presents the results for the estimation of the same specification for the pre-crisis period. The effect of financial incomes for large companies in countries with low FD now turns statistically insignificant. This effect is still positive and significant for small companies in countries with low FD. The insignificant effect of financial payments on smaller companies is confirmed also for the period before the 2007 crisis. Furthermore, given the *p-value* of the Wald test (0.329), in this period the effect of debt for companies in countries with low FD is insignificant.

Economic effects of financialization in Europe

This section is analyses the economic significance of our estimates. We first compute the long-run elasticities by dividing each short-run elasticity by one minus the coefficient of the lagged dependent variable. Multiplying the long-run elasticity by the actual cumulative change in each variable for the estimation period, we get the corresponding economic effect. We computed the economic effects based on elasticities estimated for the period 1995-2007, thus excluding the impact of the financial crisis, after which financial activities have been severely affected.

First, we discuss the economic effects based on the estimation results of the basic specification (1) in Table 1. Second, the economic effects based on specification (4) in Table 2 are presented, which highlight the different patterns arising when we account for the differences in the size of the company and the financial development of the country.

Sales (capacity utilization) have been the main determinant of accumulation in all countries with high FD, with an average economic effect of 0.26. Given a higher long run coefficient of operating income for countries with low FD (0.37), internal funds have been the main determinant in this group.

The average economic effect of operating income is 0.348 (excluding Greece for which long run coefficient is positive but the actual cumulative change has been negative).

The comparison of the economic effects of sales and operating income in countries with different levels of FD shows that NFCs' investment are relatively more demand-constrained when FD is high, while relatively more liquidity-constrained in countries with lower level of FD.

At the country level, the crowding-out effects of financial incomes on investment (inward financialization) is confirmed for NFCs in countries with high level of FD. With a long run elasticity of -0.37, and an average cumulative change of 1.04 in the period considered, the average economic effect has been equal to -0.38. Sweden and the UK experienced the highest negative effects (-0.71 and -0.50, respectively), whilst NFCs' investment in Spain and France suffered relatively less from crowding-out (-0.26 and -0.16, respectively).

While we find that financial incomes provide some additional funds for NFCs in countries with relatively low FD, the economic effect has been rather small in most of the

countries. This is mainly due to an average cumulative change of 0.34, which is three times lower than the changes in countries with high FD. The average positive economic effect has been equal to 0.07.

The adverse economic effect of financial payments (outward financialization) is the same in both countries with high and low FD. However, the NFCs in countries with lower level of FD experienced the strongest negative effect of financial payments (interests plus dividends), with an average effect of -0.18. This effect has been lower in general in countries with high FD, (-0.17), while again Sweden and UK are the most negatively affected countries (-0.24 and -0.13 respectively).

<Table 3 here>

The effect of the change in indebtedness on investment has been zero in countries with low FD (due to an insignificant estimated elasticity). Also in NFCs in countries with high level of FD, this effect is not large, though negative in the majority of the countries (the exceptions are Finland and Sweden).

Table 4 presents the computation of long run elasticities and economic effects based on Table 2 specification 4. Here the economic impacts of our two measures of financialization (and indebtedness) are accounts for the differences in the companies' sizes and levels of financial development of the country.

Again sales are the main determinant of NFCs investment in countries with high level of FD (except Belgium), whilst operating income played a less important role. Different from the previous model, in countries with lower FD the demand and the internal finance measures had a similar importance for NFCs' investment. Notwithstanding this, the stronger liquidity constraint experienced by companies in countries with relatively lower FD is confirmed also by this estimation.

We find that the negative economic effect of financial payments has been particularly strong for NFCs in counties with high level of FD. Moreover, there is no positive effect of financial incomes on small NFCs' investment.

<Table 4 here>

Interestingly, we find that, in countries with high level of FD the crowding-out impact of financial revenues on investment has been effective for both large and small companies. Even though the negative long run elasticities are higher for large companies (-0.36 vs. -0.20), on average, the negative effect in small companies has been similar to the effect in large ones (-0.33 vs. -0.31). This is due to the very high increases in small companies' financial incomes. The highest negative effects in large companies has been experienced in Sweden and the UK (-0.47 and -0.41, respectively). In countries with a low level of FD, the effect of financial incomes on large companies' investment is insignificant. However, small companies' investment benefited from increasing financial incomes, with Ireland and Belgium at the top. In Austria and Portugal, given an actual reduction in financial incomes, the economic effect of non-operating incomes has been negative for the small companies as well.

Overall, in Europe the rate of investment by the NFCs would have been 27% higher without the rise in interest and dividend payments in 2007 compared to 1995, and 10% higher without the crowding-out effect of increasing financial incomes (see Table 3). Looking at some country cases, in the UK, in large NFCs, investment rate would have been 16% higher without the rise in financial payments, and 41% higher without the increasing financial incomes, and in the small NFCs, investment would have been 35% higher without the rise in financial incomes. In Ireland, in large NFCs, investment rate would have been 14% higher without the rise in financial payments, however on a positive note, in the small NFCs, investment rate has been 222% higher due to the rise in financial incomes. Similarly, in Denmark, in large NFCs, investment rate would have been 33% higher without the rise in financial payments, however on a positive note, in the small NFCs, investment rate has been 196% higher due to the rise in financial incomes.

To summarize, overall, financialization had a negative impact on NFCs' accumulation in Europe. Whilst the effect of financial payments has been similarly negative for almost all the countries analysed, the impacts of financial incomes are more varied. In fact, in countries in which financial markets and intermediaries are highly developed, the increasing NFCs engagements in financial investment had an adverse effect on their accumulation of fixed capital.

As previously discussed, the microeconomic evidence about the effects of financialization on investment is limited to few contributions. In what follows we try to compare our findings with the existing evidence**.**

Using a different measure for financial incomes, we find an overall negative effect of financialization on the investment of the European NFCs similar to that found by Orhangazi (2008b) for the USA. The positive effect of financial incomes on accumulation of the small companies found in the case of the USA is confirmed only in part. In fact, as we have seen, when including the level of financial development as an additional macroeconomic control variable, the effect of these non-operating incomes is negative also for the relatively small companies in countries with highly developed financial systems.

The results from the estimation with the inclusion of financial development as a variable to capture different levels of financialization are, to the best of our knowledge, one of the novelties of this paper. In terms of comparison with previous studies, we can compare our evidence with the broad conventional literature about finance and investment (in particular King and Levine, 1993; Gilchrist and Himmelberg, 1995; Beck et al., 2000; Love, 2003; Beck and Levine, 2004; Levine, 2005; Love and Zicchino 2006). Even though our results indicate that a more developed financial system is easing NFCs' financial constraints (based on the estimated impact of operating income), the inclusion of as the impact of 'financialization' allowed us to uncover another effect that is not discussed in the conventional literature: in fact, a more developed financial system is at the same time enabling NFCs to engage with financial activities (thus receiving financial incomes), which are crowding-out their core business, namely the accumulation of physical assets.

Although not fully comparable, our results confirm previous findings at the microeconomic level for the USA (Orhangazi, 2008b; Davis, 2016), as well as at the

macroeconomic level for the USA and European countries (see in particular Stockhammer, 2004; van Treeck, 2008).

7. Conclusions

This paper provides a novel framework of modeling the impact of financial activities, in particular of inward and outward financialization, on investment, and presents new micro-econometric evidence on the effects of financialization on firm-level investment in Europe, using data of publicly listed NFCs. In particular, we focused on three aspects. Firstly, even though higher gains from financial investment can relax NFCs' cash-flow constraint, they can adversely affect investment by crowding-out physical investments. Secondly, increasing financial payments for external finance and favouring the shareholders (i.e. rising interest and dividend payments) may reduce the NFCs funds, and thus investment. Thirdly, even though financial development (the growth of stock markets and financial intermediaries) may allow efficient allocation of investment resources, it can also push NFCs' management to 'financialize' their companies' strategy, and suppress investment in fixed assets.

Our findings for Europe provide at least two key insights on the relationship between financialization and NFCs' accumulation. First, at the aggregate level, we show that financialization, depicted as the increasing orientation towards external financing, shareholder value orientation and the internal substitution of fixed investment by financial activity, had a fundamental role in suppressing investment in the NFCs. The lower availability of internal funds constrains the investment decision. On the one hand, the increase in financial payments (both interest and dividend payments) have a negative effect on investment. On the other hand, the negative crowding-out effects of financial activities on investment more than offset the gains from relaxing the cash-flow constraint. Financial incomes have a positive effect on investment only for the small companies, but a significant negative effect in the large companies. It has to be noted that larger companies create the vast majority of capital, and the crowding-out of physical investment of these companies by financial activity is a substantial drag on the investment performance and productivity of the European countries.

Second, financial development has an overall negative effect on NFCs' accumulation, by increasing the adverse effects of both inward and outward financialization. Our results suggest that, even though at low levels of financial development, an increase in financial development has a positive effect on investment through enhanced resource allocation, in countries with high levels of financial development a perverse effect dominates. A growth of the financial markets and intermediaries delinked from the financing requirements of NFCs is incentivizing the latter to heavily engage in non-operating (non-productive) activities, ultimately leading to stagnant levels of investment. We present robust evidence of a negative effect of financial development (as measured by the FD index) on NFCs' capital accumulation via an amplified crowding-out effect of financial incomes. When companies' financial (non-operating) activities are taken into account, the virtuous cycle between FD and investment described in Love and Zicchino (2006) is not confirmed. On the contrary, our results suggest that higher level of FD may induce NFCs to accumulate more financial assets, receive non-operational incomes, and use this liquidity to buy additional financial assets as opposed to physical assets related to their core business. Our finding at the microeconomic level highlight a further mechanism through which financial development negatively affects investment behaviour, in line with some new reservations put forward in the recent mainstream macroeconomic literature against the positive effect of a growing financial sector (e.g. Arcand et al., 2015).

These results provide support to the theoretical arguments regarding the negative effects of financialization and confirm previous empirical findings at the macro and microeconomic levels in the literature for the US economy. The increasing interrelations between the financial markets and the NFCs are progressively reducing fixed capital accumulation, and thus growth. These results contrast with the conventional arguments regarding the beneficial effects of financial liberalization and financial deepening.

The financialization of the European economic and social system has been favoured by a political processes aimed at the deregulation (liberalization) of financial markets and at the reduction of tax rates for corporations (Bieling, 2013). As we have seen, financialization had a fundamental role in depressing NFCs' investment in Europe. To reach a stable and vigorous dynamic of investment, a de-financialization of the non-financial sector is desirable. This would require an extended regulation of companies' non-operating

financial activities along with financial regulation. In addition, the estimated robust connection between past and present rates of investment (i.e. the 'hysteresis' of the investment processes) increases the potential effectiveness of de-financialization economic policies.

Finally, we discuss some policies that could help reversing this process and allow a return to more stable and higher levels of investment. In light of our results, we organize our arguments at two levels. First, we discuss possible policies to contrast the negative consequences of financialization at the aggregate level. Second, we discuss tailored policies taking into account the roles of different stages of financial development as well as the size of the NFCs.

Our results at the aggregate level show a negative effect of outward financialization (the impact of interest and dividends payments) that is common to all countries. This is in particular the case for large companies. Given that from the 1980s onwards, there has been an overall reduction in the interest rates, and a tendency of banking activities to move away from NFCs to household lending, the primary channel to focus on is the one of distributed dividends. Managers' short termist behaviour and decisions exclusively aimed at maximizing dividends distributed to the shareholders should be disincentivized. What is needed is the provision of an institutional setting for the NFCs that encourage management orientation towards long term growth and, more generally, 'stakeholder value'. Our analysis shows that this should be addressed in particular in the case of larger corporations.

With respect to what we labelled as 'inward financialization', at the aggregate level we find a strong negative effect on investment of the NFCs in countries with high levels of FD, whilst this impact is slightly positive, albeit economically negligible, for the NFCs in countries with low FD. The positive effect is becoming considerable for smaller NFCs, but only in countries with low FD. On the contrary, we find that financial investment are crowding-out physical investment in all NFCs within an environment of high FD, irrespective of their size. These findings can be informative to design accurate de-financialization polices. In fact, especially the crowding-out effect of financialization has not been addressed carefully, in particular because of the strength of the conventional idea that 'every additional fund is good for investment'.

Furthermore, in countries with high FD we find a weak (and relatively not robust) explanatory power of operating income. Consequently, it will be ineffective to further reduce NFCs income taxation, hoping for a recovery in the investment rate. The focus of corporate governance should rather be on the destination of the funds. The corporation today is an institution composed of different layers of productive and non-operating activities. A better policy of corporate governance would be the one aimed at favoring a productive destination of NFCs' internal funds, i.e. higher rate of taxation on profits which are not invested.

Given the negative effect of excessive financial development on NFCs' investment, the policy recommendation for countries with low levels would be to prevent further de-regulation of financial markets and/or intermediaries in order to avoid the negative effect associated with high levels of FD.

In addition, a wider and renewed fiscal policy can be effective in reversing the financialization-led investment depletion. Apart from the re-regulation of the financial side of our economies (both at the macro and at the corporate levels), the reform of a financialized system needs coordinated public investments. In fact, the public sector can act as the catalyst and driver of a new phase in which NFCs' objectives are essentially brought back to productive and stable capital accumulation. The main reason behind the missing link between profits and investment can be traced back to the consistent rise in the 'financialization-inequality mix' (Stockhammer, 2015). The various waves of liberalization and privatisation of large part of the economics systems fostered the emergence of behaviours detached from the objectives of equality and prosperity. The evidence speaks in favour of a vast program of public investment that can provide a consistent and sustainable 'direction' to the private initiative. Under the guidance of a macroeconomic policy framework focused on full employment and equality, which helps to define and improve the vector of choices of firms, shareholders themselves could see the long-term stability of the corporation as their main goal once again.

Notwithstanding the above considerations, at the broader level of analysis of the political projects guiding the recent development of the European economy, there is also need for a critical reassessment of the process of European financial integration (Bieling 2003, 2013). In fact, the project of European economic integration has been informed by a

set of concepts about the functioning of economic systems for which 'the market' is portrayed as the primary driver of growth, economic stability, and prosperity. Although this belief has proven to be too optimistic, especially after the 2007-8 financial meltdown and its consequences on European economies, supporters of this view are still strong. Reversing the financialization of the socio-economic system in general, and of NFCs accumulation in particular, would require an extensive socio-political 'de-financialization reform package', which goes beyond the mere fiscal and/or monetary policies.

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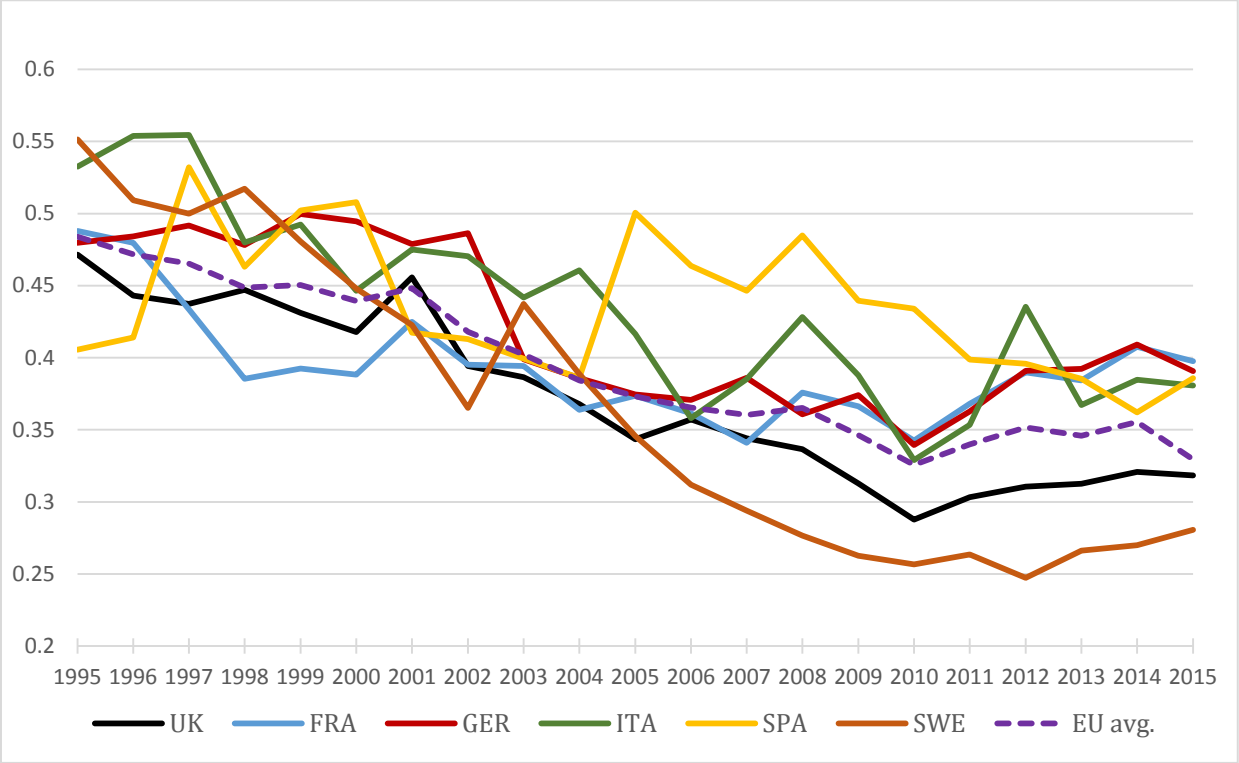
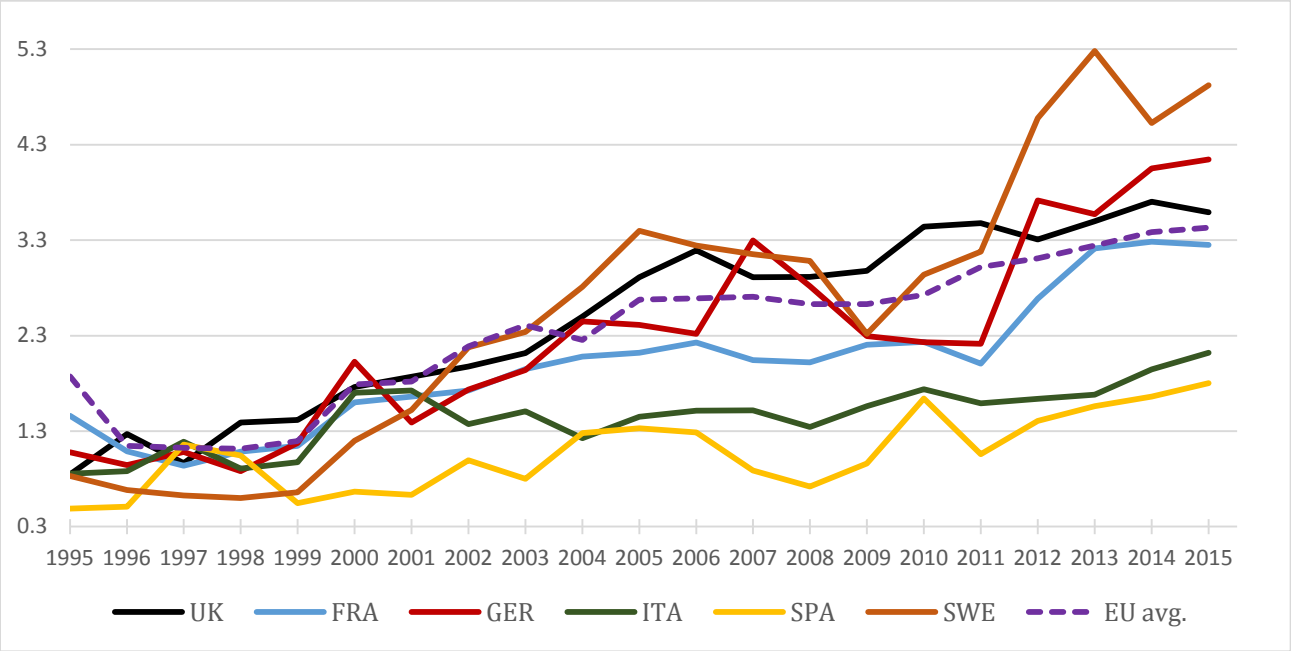
Figures and Tables

Figure 1. Additions to fixed assets/operating income (I/π), NFCs, Europe14 and selected countries, 1995-2015



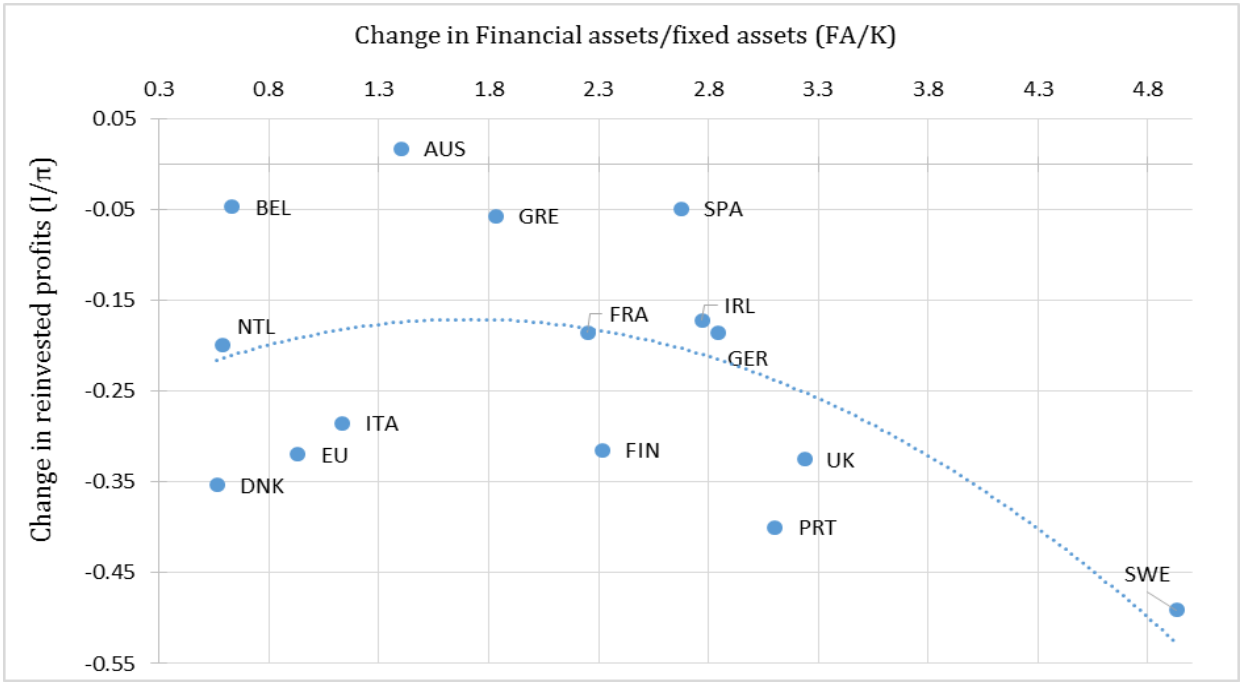
Source: authors' calculation based on Worldscope data.

Figure 2. Financial assets/fixed assets (FA/K), NFCs, Europe14 and selected countries, 1995-2015



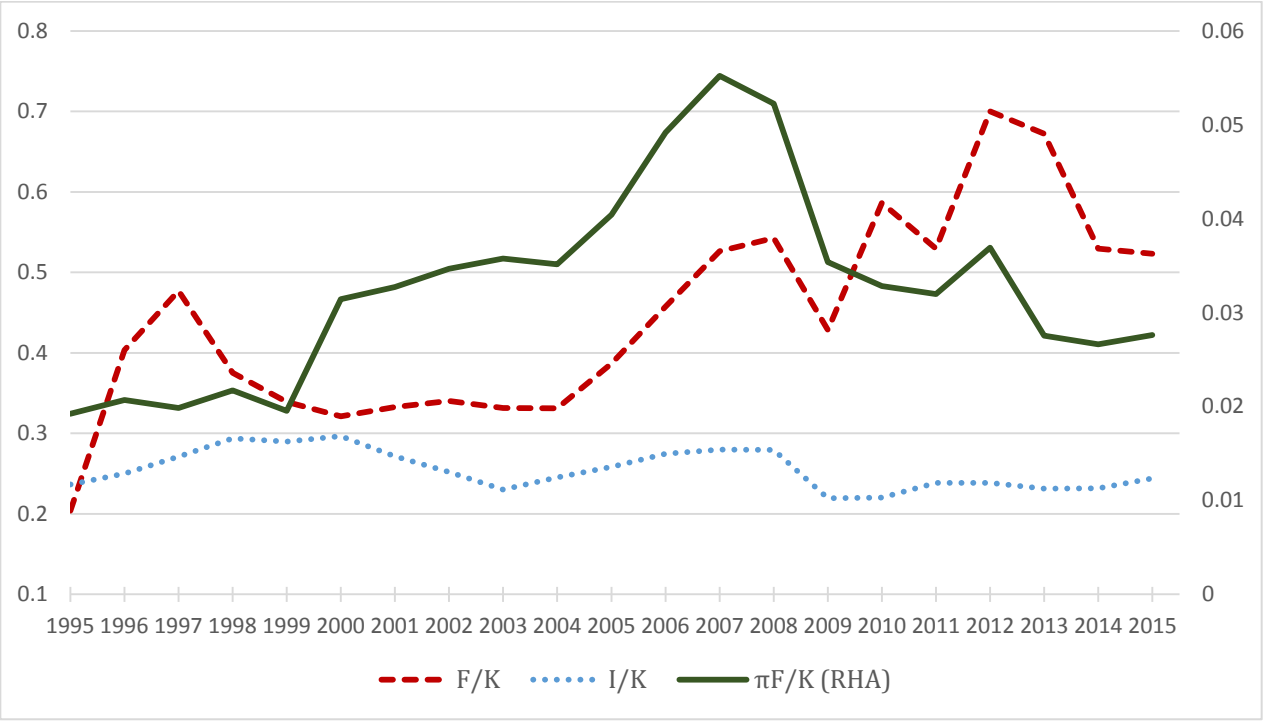
Source: authors' calculation based on Worldscope data

Figure 3. The change in reinvested profits (I/π), and the change in the accumulation of financial assets (FA/K), NFCs, selected European countries, 1995-2007



Source: authors' calculation based on Worldscope data

Figure 4. Investment/Fixed Assets (I/K), total financial payments/fixed assets (F/K), and total financial profits/fixed assets (πF/K, RHA), NFCs, Europe, 1995-2015



Source: authors' calculation based on Worldscope data

Figures5-18. Investment/Fixed Assets (I/K), total payments/fixed assets (F/K), and total financial profits/fixed assets (π_F/K, RHA), NFCs

Figure 3_ UK.

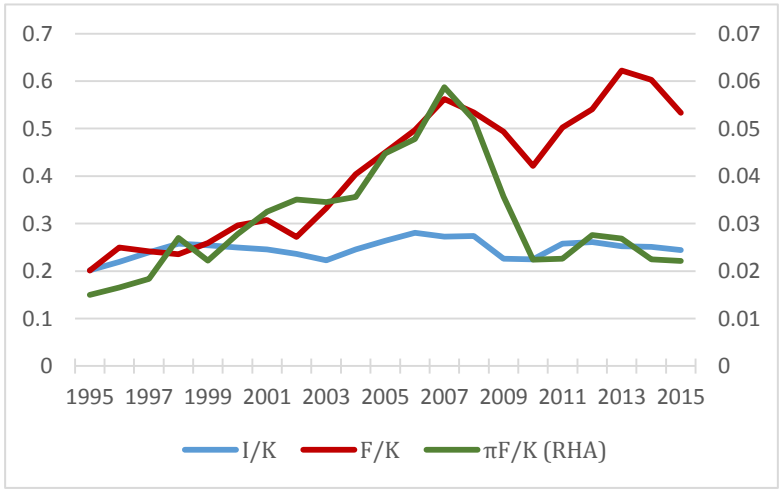


Figure 4_ France.

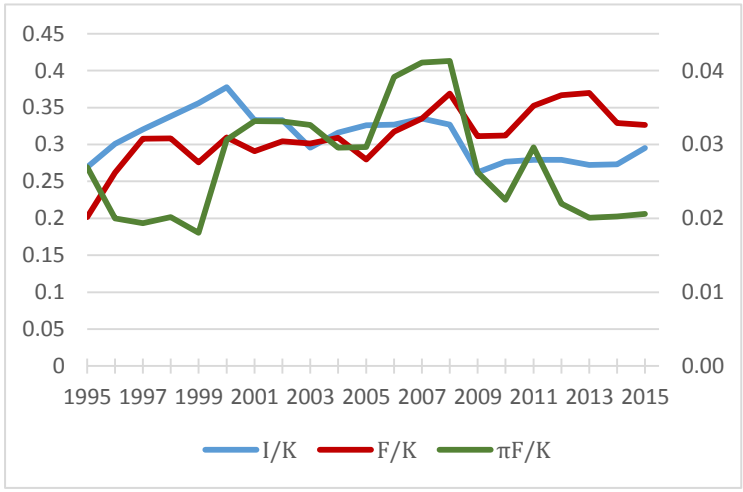


Figure 5_ Germany

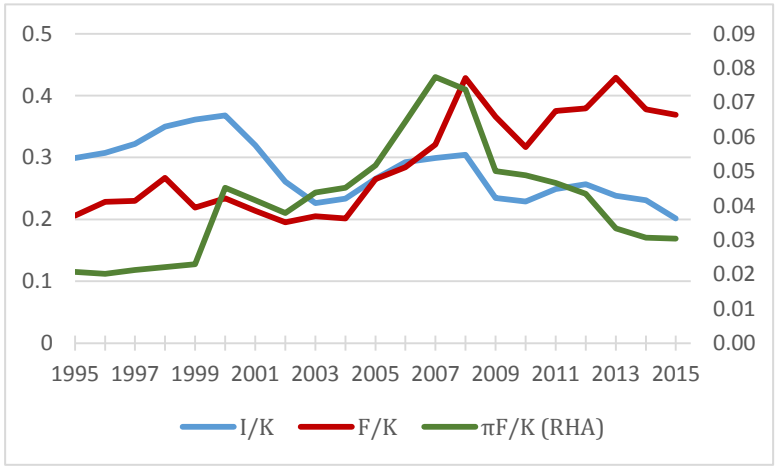


Figure 6_ Italy

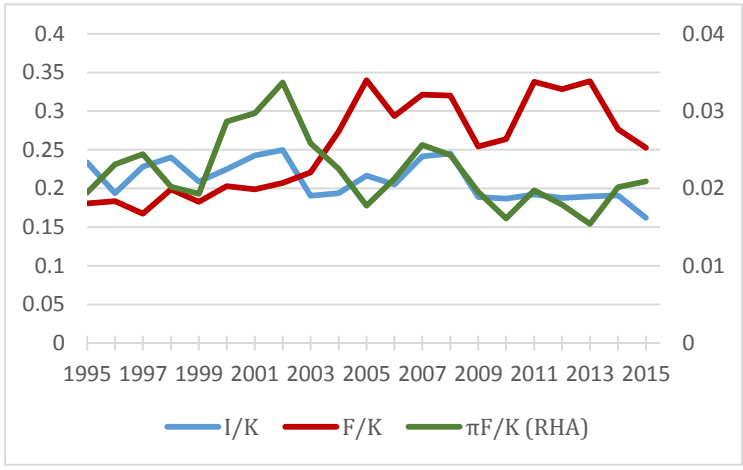


Figure 7_ Spain

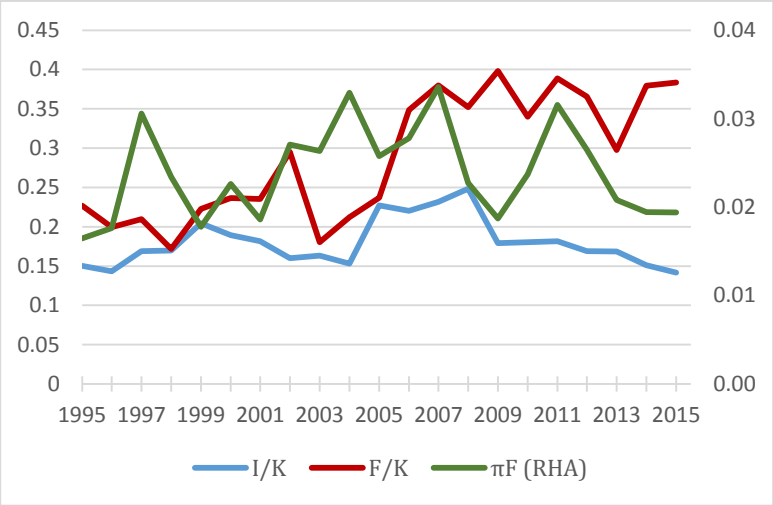


Figure 8_ Sweden

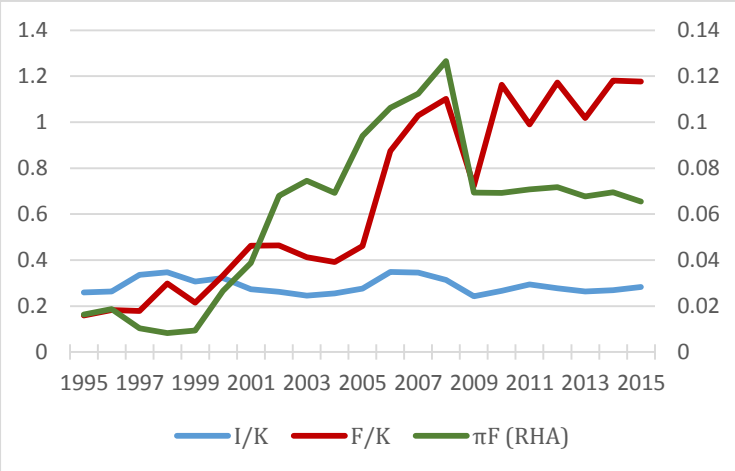


Figure 91_ The Netherlands

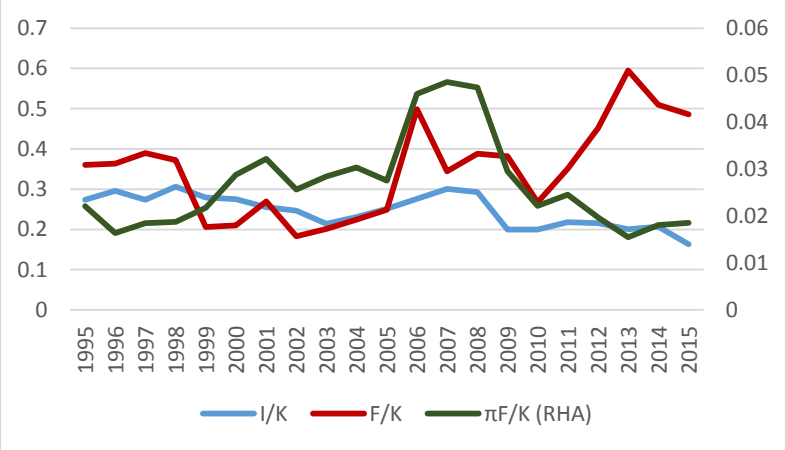


Figure 12_ Ireland

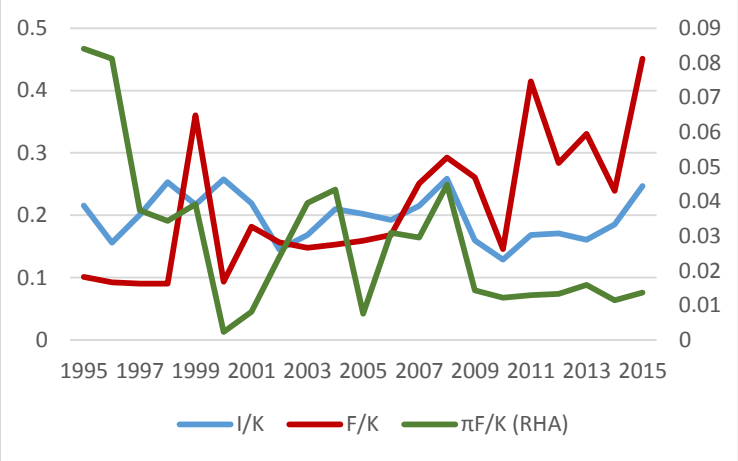


Figure 13_ Finland.

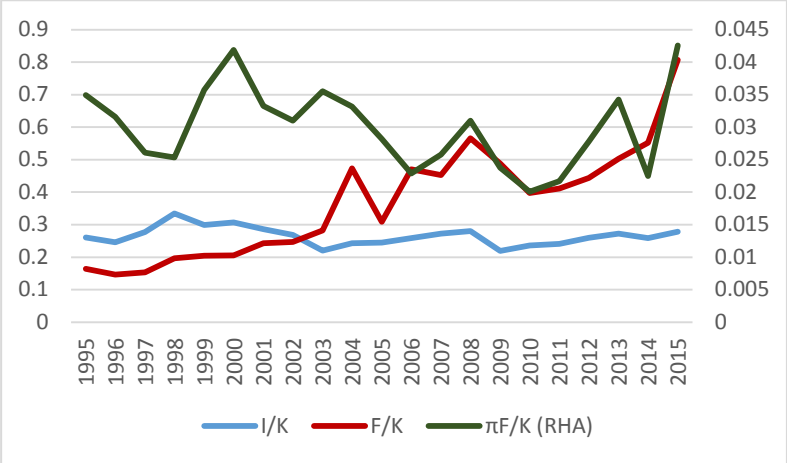


Figure 14_ Greece.

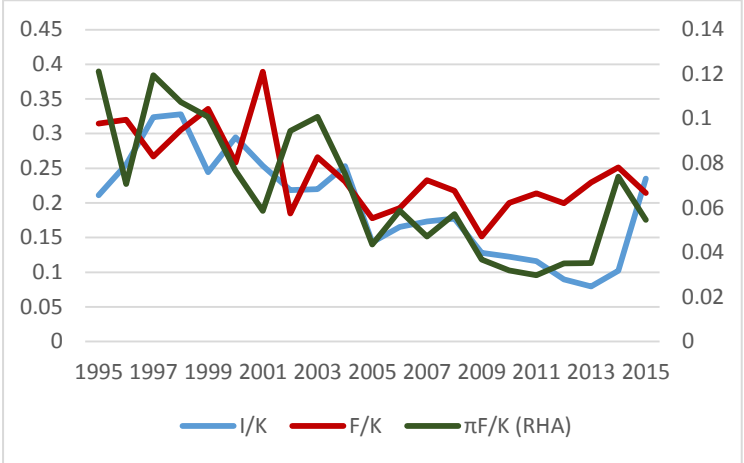


Figure 15_ Denmark.

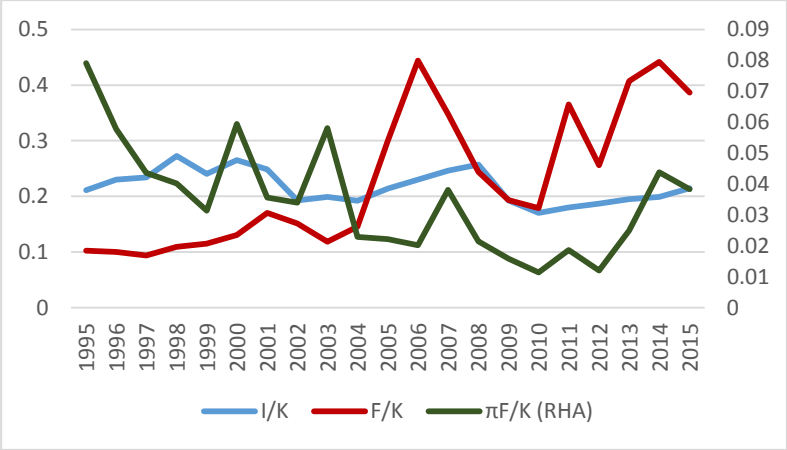


Figure 10_ Portugal.

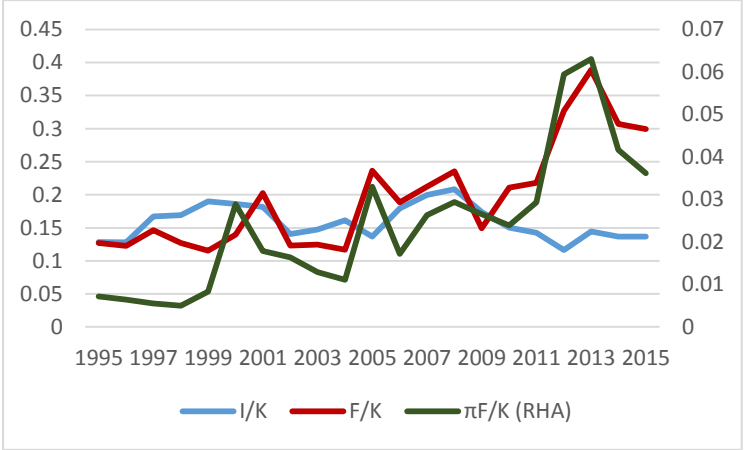


Figure 11_ Belgium.

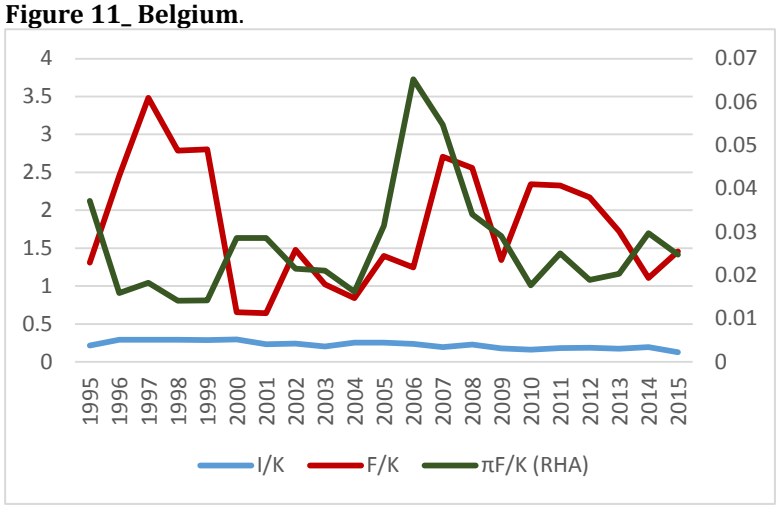
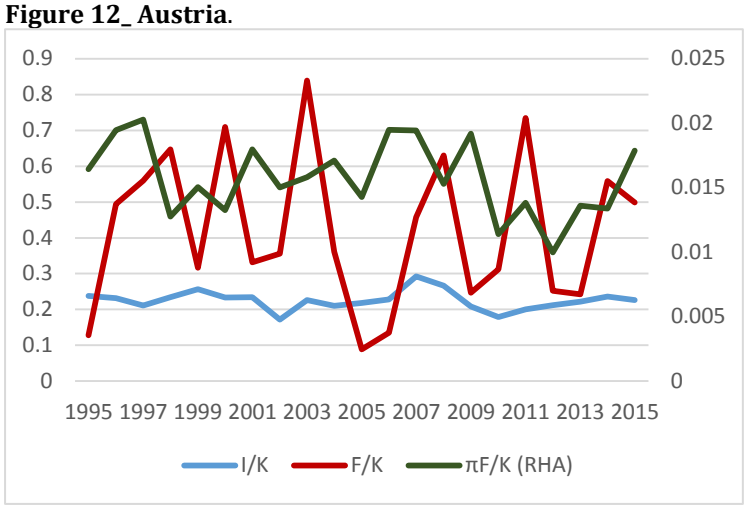
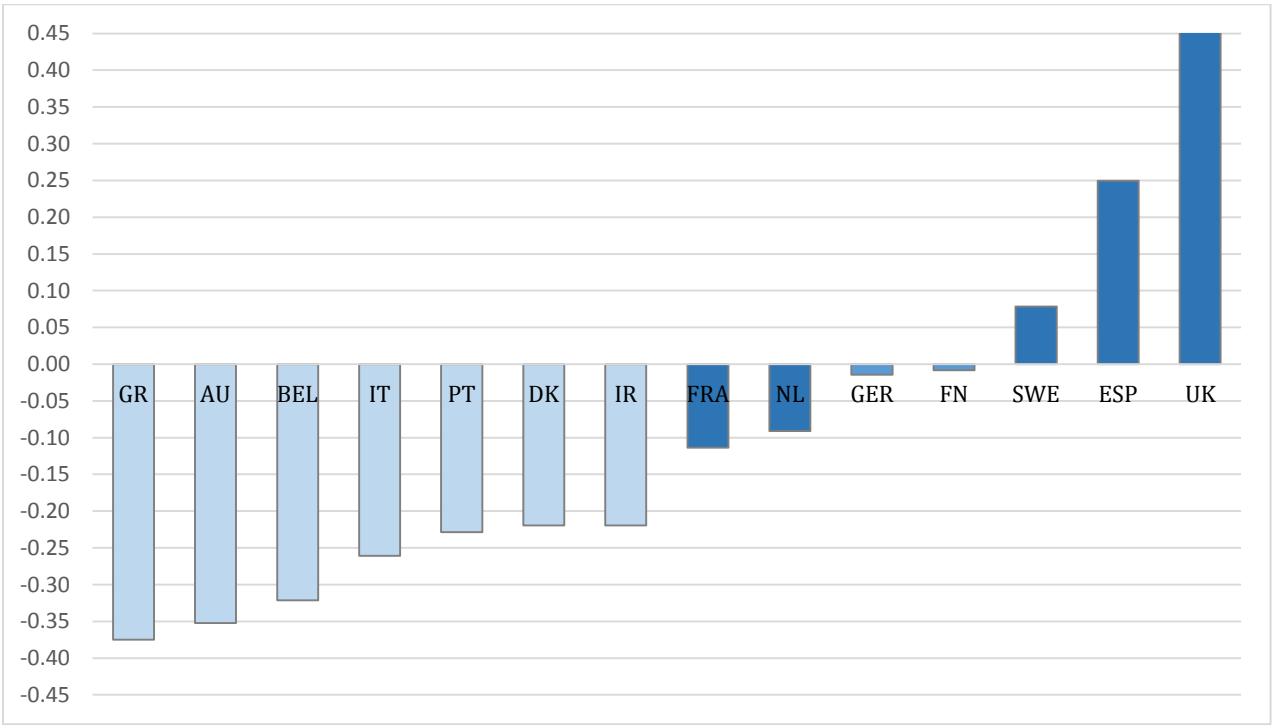


Figure 12_ Austria.



Source: authors' calculation based on Worldscope data

Figure 19. Financial development index (average value, 1995-2007)



Source: authors' calculation based on World Bank data, Global financial development database

Table 1**. Estimation results, EU 14, dependent variable (I/K)**

Variable	(1)[I]	(2)[II]	(3)[III]
$(I/K)_{t-1}$	0.299***	0.321***	0.306***
	(0.050)	(0.042)	(0.050)
$(I/K)_{t-2}$	-0.059**		-0.057**
	(0.024)		(0.028)
$(S/K)_{t-1}$	0.303***	0.225***	0.219***
	(0.074)	(0.081)	(0.055)
$(S/K)_{t-2}$	0.596***	0.350**	0.416**
	(0.207)	(0.177)	(0.181)
$[(\pi - CD)/K]_{t-1}$	0.030***	0.005	0.034***
	(0.010)	(0.012)	(0.010)
$[(\pi - CD)/K]_{t-1} * D_{20}$			0.045
			(0.031)
$(\pi_F/K)_{t-1}$	-0.070***	-0.071**	-0.067**
	(0.026)	(0.029)	(0.029)
$(\pi_F/K)_{t-2}$	-0.032**	-0.031*	-0.047**
	(0.015)	(0.018)	(0.020)
$(\pi_F/K)_{t-1} * D_{20}$			0.098**
			(0.042)
$(\pi_F/K)_{t-2} * D_{20}$			0.176**
			(0.073)
$(F/K)_{t-1}$	-0.122***	-0.155***	-0.049***
	(0.046)	(0.059)	(0.018)
$(F/K)_{t-2}$	-0.112***	-0.099**	
	(0.043)	(0.045)	
$(F/K)_{t-2} * D_{20}$			-0.141**
			(0.063)
$\Delta(TD/TA)_{t-1}$	-0.031***	-0.025**	-0.016*
	(0.010)	(0.012)	(0.009)
$(Q)_{t-1}$	0.117*	0.155**	0.149***
	(0.067)	(0.067)	(0.033)
Number of Observations	25726	12551	25726
Number of Firms	2881	2201	2881
Number of Instruments	36	29	36
p-value Hanses test	0.749	0.345	0.159
p-value A-B test (AR 2)	0.607	0.348	0.445
Time effects	*yes*	*yes*	*yes*
p-value Wald test for time effects	0.001	0.000	0.003
p-value $[(\pi - CD)/K]_{t-1} + [(\pi - CD)/K]_{t-1} * D_{20}$			0.009
p-value $(\pi_F/K) + (\pi_F/K)_{t-1} * D_{20}$			0.051
p-value $(F/K)_{t-1} + (F/K)_{t-1} * D_{20}$			0.003

Weighted regression (w=1/total country obs.). Specifications I and II are based on Equation (1), specification III is based on Equation (2), two-step difference-GMM estimations. Coefficients for the year dummies are not reported. Robust corrected standard error in parenthesis. * significant at 10%, ** significant ant 5%, *** significant at 1%.

Table 1a. Estimation results, selected countries, 1995-2015, dependent variable $(I/K)_t$

	UK	***SWE***	***GER***	***SPA***	***ITA***	***FRA***
$(I/K)_{t-1}$	0.409***	0.283***	0.393***	0.457***	0.275***	0.280***
	(0.029)	(0.065)	(0.101)	(0.066)	(0.041)	(0.046)
$(S/K)_{t-1}$	0.310***	0.224**	0.731*	0.461***	0.256**	0.513***
	(0.061)	(0.108)	(0.374)	(0.177)	(0.124)	(0.086)
$[(\pi - CD)/K]_{t-1}$	0.023*	0.121*	0.025	0.011	0.055*	0.016
	(0.013)	(0.065)	(0.020)	(0.034)	(0.029)	(0.029)
$(\pi_F/K)_{t-1}$	-0.036**	-0.107**	-0.062*	-0.053**	-0.033*	-0.094***
	(0.016)	(0.049)	(0.033)	(0.025)	(0.020)	(0.023)
$(\pi_F/K)_{t-2}$		-0.059**				-0.040***
		(0.025)				(0.015)
$(F/K)_{t-1}$	-0.091***	-0.026	-0.063***	-0.383***	0.003	-0.130**
	(0.017)	(0.030)	(0.021)	(0.100)	(0.049)	(0.062)
$(Q)_{t-1}$	0.172***					0.226***
	(0.028)					(0.074)
$(Q)_{t-2}$	-0.059***					
	(0.020)					
Number of Observations	9481	1998	3438	1039	1456	3557
Number of Firms	915	231	400	116	176	417
Number of Instruments	30	32	38	30	33	35
p-value Hanses test	0.184	0.451	0.262	0.411	0.427	0.523
p-value A-B test (AR 2)	0.170	0.613	0.193	0.320	0.874	0.165
Time effects	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
p-value Wald test for time effects	0.000	0.004	0.000	0.000	0.000	0.001

All specification based on Equation (1), two-step difference-GMM estimations. Coefficients for the year dummies are not reported. Robust corrected standard error in parenthesis * significant at 10%, ** significant ant 5%, *** significant at 1%.

Table 1b. Estimation results, selected countries, 1995-2015, dependent variable $(I/K)_t$

	AUT	DNK	FNL	BLG	PRT	IRL	GRE	NTH
$(I/K)_{t-1}$	0.378***	0.191**	0.348***	0.096	0.269***	0.432*	0.382**	0.294***
	(0.092)	(0.084)	(0.056)	(0.069)	(0.102)	(0.251)	(0.175)	(0.089)
$(S/K)_{t-1}$	0.751***	0.501*	0.534***	0.036	1.302*	0.732	0.477	0.191**
	(0.207)	(0.287)	(0.205)	(0.155)	(0.792)	(0.550)	(0.398)	(0.088)
$[(\pi - CD)/K]_{t-1}$	0.045	0.075**	0.010	0.068**	-0.067	0.024	-0.025	0.011
	(0.039)	(0.036)	(0.052)	(0.025)	(0.064)	(0.095)	(0.045)	(0.027)
$(\pi_F/K)_{t-1}$	-0.214**	0.081	0.033	0.049*	-0.050	-0.147**	-0.032	-0.076**
	(0.084)	(0.071)	(0.035)	(0.030)	(0.075)	(0.058)	(0.051)	(0.034)
$(F/K)_{t-1}$	0.024	-0.249**	-0.238***	0.034	-0.435***	-0.528*	0.254	-0.097***
	(0.092)	(0.098)	(0.091)	(0.074)	(0.158)	(0.269)	(0.164)	(0.037)
$(Q)_{t-1}$	0.151*	0.245**						-0.252***
	(0.092)	(0.119)						(0.064)
Number of Observations	470	708	561	684	314	536	580	904
Number of Firms	76	89	84	82	54	55	92	94
Number of Instruments	34	34	32	32	32	32	32	34
p-value Hanses test	0.735	0.485	0.468	0.445	0.085	0.097	0.599	0.410
p-value A-B test (AR 2)	0.242	0.727	0.022	0.696	0.427	0.909	0.622	0.001
Time effects	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
p-value Wald test for time effects	0.003	0.000	0.000	0.000	0.001	0.005	0.002	0.011

All specification based on Equation (1), two-step difference-GMM estimations. Coefficients for the year dummies are not reported. Robust corrected standard error in parenthesis * significant at 10%, ** significant ant 5%, *** significant at 1%.

Table 2. Estimation results, aggregate European 14, dependent variable $(I/K)_t$

	(1)[I]	(2)[II]	(3)[III]	(4)[IV]
$(I/K)_{t-1}$	0.304***	0.372***	0.326***	0.328***
	(0.043)	(0.038)	(0.040)	(0.042)
$(I/K)_{t-2}$	- 0.054**		- 0.050**	
	(0.022)		(0.021)	
$(S/K)_{t-1}$	0.238***	0.184***	0.210***	0.218***
	(0.053)	(0.082)	(0.049)	(0.082)
$(S/K)_{t-2}$	0.176**		0.192**	0.096**
	(0.085)		(0.080)	(0.044)
$[(\pi - CD)/K]_{t-1}$	0.037**	0.011*	0.038***	0.015*
	(0.016)	(0.005)	(0.009)	(0.009)
$[(\pi - CD)/K]_{t-1} * D_{LFD}$	0.556**	0.221*	0.451**	0.275**
	(0.218)	(0.118)	(0.201)	(0.132)
$(\pi_F/K)_{t-1}$	- 0.156***	- 0.132***	- 0.142***	- 0.158***
	(0.038)	(0.038)	(0.035)	(0.042)
$(\pi_F/K)_{t-2}$	- 0.111***	- 0.099***	- 0.101***	- 0.083***
	(0.029)	(0.026)	(0.027)	(0.030)
$(\pi_F/K)_{t-1} * D_{LFD}$	0.180***	0.167***	0.148***	0.162***
	(0.043)	(0.046)	(0.037)	(0.050)
$(\pi_F/K)_{t-2} * D_{LFD}$	0.163***	0.187***	0.150***	0.140**
	(0.048)	(0.049)	(0.045)	(0.055)
$(\pi_F/K)_{t-1} * D_{20}$			0.081***	0.104**
			(0.031)	(0.047)
$(F/K)_{t-1}$	- 0.068***	- 0.081*	- 0.062***	- 0.107*
	(0.026)	0.044	(0.020)	(0.060)
$(F/K)_{t-1} * D_{LFD}$	- 0.152***	- 0.050	- 0.143***	- 0.079**
	(0.054)	(0.036)	(0.052)	(0.031)
$(F/K)_{t-1} * D_{20}$			0.078*	0.287
			(0.047)	(0.204)
$\Delta(TD/TA)_{t-1}$	- 0.016**	- 0.030***	- 0.015**	- 0.029***
	(0.007)	(0.008)	(0.007)	(0.009)
$\Delta(TD/TA)_{t-1} * D_{LFD}$	- 0.070***	0.056***	- 0.072***	0.048**
	(0.025)	(0.021)	(0.028)	(0.021)
$(Q)_{t-1}$	0.182***	0.157**	0.170***	0.113***
	(0.031)	(0.034)	(0.031)	(0.033)
Number of Observation	25726	14672	25726	14672
Number of Firms	2881	2330	2881	2330
Number of Instruments	46	44	48	44
p-value Hanses test	0.281	0.494	0.237	0.378
p-value A-B test (AR 2)	0.244	0.496	0.239	0.413
Time effects	*yes*	*yes*	*yes*	*yes*
p-value $[(\pi - CD)/K]_{t-1} + [(\pi - CD)/Kt{-}1{*}DLFD$	0.008	0.049	0.019	0.028
p-value $(\pi_F/K) + (\pi_F/K)_{t-1} * D_{LFD}$	0.013	0.001	0.075	0.123
p-value $(F/K)_{t-1} + (F/K)_{t-1} * D_{LFD}$	0.000	0.027	0.000	0.009
p-value $(TD/TA)_{t-1} + (TD/TA)_{t-1} * D_{LFD}$	0.001	0.182	0.003	0.329
p-value $\left(\frac{\pi_F}{K}\right) + (\pi_F/K)_{t-1} * D_{20}$			0.002	0.065
p-value $\left(\frac{\pi_F}{K}\right) * D_{20} + (\pi_F/K)_{t-1} * D_{LFD}$			0.000	0.000
p-value $(F/K)_{t-1} + (F/K)_{t-1} * D_{20}$			0.702	0.328
p-value $(F/K)_{t-1} * D_{20} + (F/K)_{t-1} * D_{LFD}$			0.293	0.302

Table 3. Economic effects by country, disaggregation by level of financial development (FD) 1995-2007

		S/K			π/K			π_F/K			F/K			ΔTD/TA		
Country	FD	Long-run Coefficient	Actual cumulative Change	Economic Effect	Long-run Coefficient	Actual cumulative Change	Economic Effect	Long-run Coefficient	Actual cumulative Change	Economic Effect	Long-run Coefficient	Actual cumulative Change	Economic Effect	Long-run Coefficient	Actual cumulative Change	Economic Effect
Germany	HD	0.293	0.747	0.219	0.018	2.911	0.052	-0.368	1.319	-0.485	-0.129	0.442	-0.057	-0.048	0.029	-0.001
Spain	HD	0.293	0.135	0.040	0.018	0.536	0.010	-0.368	0.713	-0.262	-0.129	0.517	-0.067	-0.048	0.391	-0.019
Finland	HD	0.293	1.227	0.360	0.018	1.140	0.021	-0.368	0.771	-0.284	-0.129	1.017	-0.131	-0.048	-0.300	0.014
France	HD	0.293	0.783	0.229	0.018	1.003	0.018	-0.368	0.423	-0.156	-0.129	0.508	-0.065	-0.048	0.050	-0.002
The Netherlands	HD	0.293	0.614	0.180	0.018	0.412	0.007	-0.368	0.789	-0.290	-0.129	-0.044	0.006	-0.048	0.070	-0.003
Sweden	HD	0.293	1.830	0.536	0.018	1.391	0.025	-0.368	1.927	-0.709	-0.129	1.866	-0.241	-0.048	-0.051	0.002
UK	HD	0.293	0.842	0.247	0.018	1.273	0.023	-0.368	1.367	-0.503	-0.129	1.029	-0.133	-0.048	0.233	-0.011
Belgium	LD	0.293	0.509	0.149	0.369	1.428	0.527	0.196	0.387	0.076	-0.209	0.727	-0.152	0.000	0.042	0.000
Denmark	LD	0.293	0.714	0.209	0.369	0.675	0.249	0.196	0.183	0.036	-0.209	1.226	-0.256	0.000	0.108	0.000
Greece	LD	0.293	-0.211	-0.062	0.369	-0.284	-0.105	0.196	0.099	0.019	-0.209	-0.301	0.063	0.000	0.289	0.000
Ireland	LD	0.293	1.315	0.385	0.369	1.333	0.492	0.196	-0.015	-0.003	-0.209	0.910	-0.190	0.000	-0.049	0.000
Italy	LD	0.293	0.861	0.252	0.369	1.050	0.387	0.196	0.276	0.054	-0.209	0.575	-0.120	0.000	-0.012	0.000
Austria	LD	0.293	0.067	0.020	0.369	1.004	0.370	0.196	0.168	0.033	-0.209	1.273	-0.266	0.000	0.055	0.000
Portugal	LD	0.293	0.749	0.219	0.369	0.165	0.061	0.196	1.300	0.255	-0.209	0.514	-0.107	0.000	0.455	0.000
Europe		0.847	0.727	0.616	0.000	1.003	0.000	-0.150	0.693	-0.104	-0.374	0.733	-0.274	-0.037	0.093	-0.003

The economic effects for single countries are based on estimated elasticities in Table 2, Column 2, specification 3. The economic effects for Europe are based on estimated elasticities in Table 1, Column 2, specification 1.

Table 4. **Economic effects by country, disaggregation by level of financial development (FD) and by size, 1995-2007**

			S/K			(π-CD)/K			π_F/K			F/K			ΔTD/TA		
Country	FD	SIZE	Long-run Coefficient	Actual cumulative Change	Economic Effect	Long-run Coefficient	Actual cumulative Change	Economic Effect	Long-run Coefficient	Actual cumulative Change	Economic Effect	Long-run Coefficient	Actual cumulative Change	Economic Effect	Long-run Coefficient	Actual cumulative Change	Economic Effect
Germany	HD	LARGE	0.467	0.747	0.349	0.022	2.911	0.064	-0.359	1.093	-0.392	-0.159	0.358	-0.057	-0.043	0.029	-0.001
		SMALL							-0.204	1.755	-0.358	0.000	0.466	0.000			
Spain	HD	LARGE	0.467	0.135	0.063	0.022	0.536	0.012	-0.359	0.588	-0.211	-0.159	0.569	-0.091	-0.043	0.391	-0.017
		SMALL							-0.204	1.444	-0.294	0.000	0.287	0.000			
Finland	HD	LARGE	0.467	1.227	0.573	0.022	1.140	0.025	-0.359	0.720	-0.258	-0.159	1.261	-0.201	-0.043	-0.300	0.013
		SMALL							-0.204	1.193	-0.243	0.000	0.891	0.000			
France	HD	LARGE	0.467	0.783	0.366	0.022	1.003	0.022	-0.359	0.449	-0.161	-0.159	0.412	-0.066	-0.043	0.050	-0.002
		SMALL							-0.204	1.760	-0.359	0.000	0.933	0.000			
The Netherlands	HD	LARGE	0.467	0.614	0.287	0.022	0.412	0.009	-0.359	0.684	-0.245	-0.159	0.189	-0.030	-0.043	0.070	-0.003
		SMALL							-0.204	1.070	-0.218	0.000	-0.745	0.000			
Sweden	HD	LARGE	0.467	1.830	0.854	0.022	1.390	0.031	-0.359	1.310	-0.470	-0.159	1.670	-0.266	-0.043	-0.051	0.002
		SMALL							-0.204	2.417	-0.493	0.000	2.129	0.000			
UK	HD	LARGE	0.467	0.842	0.393	0.022	1.273	0.028	-0.359	1.154	-0.414	-0.159	1.004	-0.160	-0.043	0.233	-0.010
		SMALL							-0.204	1.715	-0.350	0.000	1.381	0.000			
Belgium	LD	LARGE	0.467	0.509	0.238	0.432	1.428	0.616	0.000	0.394	0.000	-0.277	2.232	-0.618	0.000	0.042	0.000
		SMALL							0.604	1.849	1.117	0.000	1.885	0.000			
Denmark	LD	LARGE	0.467	0.714	0.333	0.432	0.675	0.291	0.000	-0.724	0.000	-0.277	1.209	-0.335	0.000	0.108	0.000
		SMALL							0.604	0.325	0.196	0.000	1.284	0.000			
Greece	LD	LARGE	0.467	-0.211	-0.099	0.432	-0.284	-0.123	0.000	0.052	0.000	-0.277	-0.279	0.077	0.000	0.289	0.000
		SMALL							0.604	0.926	0.560	0.000	-0.264	0.000			
Ireland	LD	LARGE	0.467	1.315	0.614	0.432	1.333	0.575	0.000	0.578	0.000	-0.277	0.518	-0.143	0.000	-0.049	0.000
		SMALL							0.604	3.674	2.219	0.000	1.727	0.000			
Italy	LD	LARGE	0.467	0.861	0.402	0.432	1.050	0.453	0.000	-0.048	0.000	-0.277	0.475	-0.131	0.000	-0.012	0.000
		SMALL							0.604	0.990	0.598	0.000	1.503	0.000			
Austria	LD	LARGE	0.467	0.067	0.031	0.432	1.004	0.433	0.000	0.210	0.000	-0.277	1.064	-0.294	0.000	0.055	0.000
		SMALL							0.604	-0.681	-0.411	0.000	2.205	0.000			
Portugal	LD	LARGE	0.467	0.749	0.350	0.432	0.165	0.071	0.000	1.261	0.000	-0.277	0.555	-0.153	0.000	0.455	0.000
		SMALL							0.604	-0.205	-0.124	0.000	0.179	0.000			
Europe		LARGE	0.997	0.727	0.725	0.053	1.003	0.054	-0.179	0.560	-0.100	-0.077	0.802	-0.062	-0.025	0.093	-0.002
		SMALL							0.242	1.302	0.315	-0.270	0.990	-0.268			

The economic effects for single countries are based on estimated elasticities in Table 2, specification 4. The economic effects for Europe are based on estimated elasticities in Table 1, Column 3, specification 2.

Appendix

Table 1A. **Variables definition and codes.**

Symbol	*Variable*	*Definition*	*Worldscope Code*
I	Investment	Addition to fixed assets	WC04601
K	Capital stock	Net fixed capital stock	WC02501
S	Sales	Net sales	WC01001
π	Net profit rate	Operating income-depreciation	WC01250-WC04051
F	Financial Payments	Interest + cash dividends paid	WC01251+ WC04551
π_F	Non-operating profit	Non-operating profit from interest and dividends	WC01266+ WC01268
FA	Financial assets	Cash, other investment, short-term investment	WC02003+ WC02250+ WC02008
Q	Average Tobin's Q[23]	(Market share price*common share outstanding + total liabilities)/total assets	$\frac{\text{WC08001} + \text{WC03551}}{\text{WC02999}}$
TD	Total debt	sum of long-term and short-term debt	WC03255
FD	Financial Development	Standardized average of Stock market and financial intermediaries development over GDP	Index1 + Findex1

A more detailed guide about variables is available a t the link:
http://lipas.uwasa.fi/~jaty/thomson/worldscope_def.pdf (last accessed 21/08/2016

[23] This is a proxy for average firms' market evaluation (Chung and Pruitt, 1994) based on the work of Lindenberg and Ross (1981).

Table 2A. Summary statistic for the aggregate sample

Variable		Mean	Std. Dev.	Observations	
I/K	overall	0.25	0.20	N =	25726
	between	0.16	1.10	n =	2881
	within	0.14	-0.442	T-bar =	15.9
S/K	overall	13.49	28.98	N =	25726
	between	33.92	0.062	n =	2881
	within	15.60	-281.82	T-bar =	15.6
$(\pi - CD)/K$	overall	0.66	2.50	N =	25726
	between	2.10	-17.98	n =	2881
	within	1.93	-74.66	T-bar =	15.1
π_F/K	overall	0.032	0.12	N =	25726
	between	0.056	0.89	n =	2881
	within	0.10	-.86	T-bar =	15.8
F/K	overall	0.46	3.41	N =	25726
	between	2.79	85.69	n =	2881
	within	2.59	-85.19	T-bar =	15.1
I/π	overall	0.38	0.26	N =	25726
	between	0.22	0.97	n =	2881
	within	0.18	-0.25	T-bar =	15.2
FA/K	overall	2.44	13.77	N =	25726
	between	9.86	0.10	n =	2881
	within	10.48	-317.04	T-bar =	15.6
Q	overall	1.54	0.99	N =	25329
	between	0.71	0.34	n =	2864
	within	0.73	-3.43	T-bar =	15.7

Source: authors' calculation based on Worldscope data
N = number of total observations, *n*= number of groups, *T-bar* = average time period

Table 3A. Sample coverage across countries, and by size

	(a) Number of observations	(b) Share of total observations	(c) Number of firms	(d) Share of total firms	(e) Firms with avg. Ta < 20pTa (%)	(f) Firms with avg. Ta >80pTa (%)	Difference (f-e)
Country							
Austria	470	0,02	76	0,03	12 (15,79)	18 (23,68)	7,89
Belgium	684	0,03	82	0,03	21 (25,61)	28 (34,15)	8,54
Denmark	708	0,03	89	0,03	18 (20,22)	32 (35,96)	15,73
Finland	561	0,02	84	0,03	24 (28,57)	36 (42,86)	14,29
France	3557	0,14	417	0,14	109(26,14)	132(31,65)	5,52
Germany	3438	0,13	400	0,14	85 (21,25)	119(29,75)	8,50
Greece	580	0,02	92	0,03	38 (41,30)	49 (53,26)	11,96
Ireland	536	0,02	55	0,02	6 (10,91)	11 (20,00)	9,09
Italy	1456	0,06	176	0,06	36 (20,45)	56 (31,82)	11,36
Netherlands	904	0,04	94	0,03	19 (20,21)	34 (36,21)	15,96
Portugal	314	0,01	54	0,02	7 (12,96)	11 (20,37)	7,41
Spain	1039	0,04	116	0,04	35 (30,17)	60 (51,72)	21,55
Sweden	1998	0,08	231	0,08	55 (23,81)	68 (29,44)	5,63
United Kingdom	9481	0,37	915	0,32	180(19,67)	276(30,16)	10,49
Europe	25726	1,00	2881	1,00	645(22,39)	930(32,28)	9,89

Source: authors' calculation based on Worldscope data

Table 5A. Disaggregated measure of financial development by country, period 1995-2007

Country	*Indicator Name*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
AUT	Domestic credit to private sector (% of GDP)	92.66	95.67	102.35	100.85	99.34	102.62	105.07	104.58	104.81	105.97	115.63	116.37	115.44	120.29
AUT	Liquid liabilities to GDP (%)	89.57	89.78	89.86	88.38	87.64	86.90	87.54	86.98	87.99	88.65	91.44	93.17	95.02	100.72
AUT	Stock market capitalization to GDP (%)	14.12	13.89	15.71	16.25	15.43	15.23	14.03	13.90	18.39	25.15	34.60	48.72	58.17	38.60
AUT	Stock market total value traded to GDP (%)	9.35	9.66	7.23	6.92	6.71	5.08	4.29	3.24	3.50	6.10	11.44	19.35	27.63	28.47
AUT	Stock market turnover ratio (%)	76.45	62.97	37.22	50.75	35.66	32.08	26.96	20.16	23.15	32.51	43.49	50.26	55.65	65.38
BEL	Domestic credit to private sector (% of GDP)	72.71	74.98	75.54	78.03	80.52	77.83	75.95	74.04	73.81	71.19	73.76	82.03	90.89	93.90
BEL	Liquid liabilities to GDP (%)	76.66	80.79	83.24	85.60	86.79	87.97	87.83	89.62	94.12	98.11	103.05	104.38	103.74	106.88
BEL	Stock market capitalization to GDP (%)	35.35	39.93	48.31	74.54	82.79	73.82	74.29	60.04	52.66	64.43	75.07	86.01	88.95	58.43
BEL	Stock market total value traded to GDP (%)	5.26	7.37	10.50	16.58	22.06	19.27	16.88	15.31	13.42	17.61	27.42	36.64	47.29	48.62
BEL	Stock market turnover ratio (%)	15.16	23.72	24.62	29.06	28.06	22.13	23.80	22.27	25.99	34.36	44.38	48.23	62.54	71.44
DNK	Domestic credit to private sector (% of GDP)	30.85	31.53	32.09	34.98	34.87	135.33	142.56	145.47	151.62	158.16	171.78	185.68	202.50	216.32
DNK	Liquid liabilities to GDP (%)	54.88	56.10	57.27	58.14	56.46	51.43	49.36	49.94	51.52	53.37	57.60	61.39	65.32	70.10
DNK	Stock market capitalization to GDP (%)	32.52	34.22	45.96	55.38	57.68	62.21	60.23	49.33	50.48	58.42	64.19	75.21	85.02	63.45
DNK	Stock market total value traded to GDP (%)	15.74	16.22	22.67	33.72	37.50	45.44	49.81	36.62	30.45	35.05	48.55	60.49	69.75	69.59
DNK	Stock market turnover ratio (%)	43.84	54.93	59.85	73.33	62.08	91.94	73.02	60.13	62.42	68.17	91.93	85.61	91.46	97.55
FIN	Domestic credit to private sector (% of GDP)	61.86	59.42	53.12	51.96	53.31	53.15	55.92	58.34	64.18	67.60	75.05	78.80	81.52	85.98
FIN	Liquid liabilities to GDP (%)	55.23	54.29	49.90	47.35	49.08	48.80	47.31	49.14	52.22	52.58	54.27	54.72	55.56	61.36
FIN	Stock market capitalization to GDP (%)	34.51	41.09	52.65	86.90	190.40	246.05	192.39	125.96	102.80	98.37	100.75	114.61	134.15	103.11
FIN	Stock market total value traded to GDP (%)	13.35	15.85	22.88	36.83	65.64	125.12	153.42	135.36	114.53	105.95	126.40	152.05	189.79	181.66
FIN	Stock market turnover ratio (%)	42.10	42.53	56.16	53.49	45.75	68.96	74.66	103.64	96.81	118.31	138.66	149.71	164.56	139.22
FRA	Domestic credit to private sector (% of GDP)	86.04	82.91	82.01	81.81	81.61	85.13	87.90	85.95	88.66	90.61	92.67	98.43	105.58	108.76
FRA	Liquid liabilities to GDP (%)	63.33	66.23	67.65	35.19	35.28	65.28	65.46	66.92	69.96	72.43	73.67	73.89	74.38	78.87
FRA	Stock market capitalization to GDP (%)	32.62	35.10	42.10	56.43	82.95	102.82	96.57	76.43	70.21	74.34	77.87	93.36	104.66	79.64
FRA	Stock market total value traded to GDP (%)	22.51	20.22	22.76	33.67	46.32	66.53	79.68	71.75	62.14	64.05	69.06	89.78	118.64	123.47
FRA	Stock market turnover ratio (%)	71.08	50.20	67.27	71.33	65.19	79.44	83.36	84.22	87.72	92.65	91.73	118.93	126.49	144.80
DEU	Domestic credit to private sector (% of GDP)	100.42	106.35	110.61	116.67	116.31	119.45	118.80	117.52	116.29	112.93	112.59	109.60	105.25	108.61
DEU	Liquid liabilities to GDP (%)	64.62	67.50	69.35	70.34	85.62	98.01	96.95	98.69	101.57	103.27	105.42	106.28	108.02	115.64
DEU	Stock market capitalization to GDP (%)	22.05	25.09	32.77	43.82	58.16	66.35	61.38	45.37	39.27	43.65	43.65	49.32	58.37	46.73
DEU	Stock market total value traded to GDP (%)	21.75	27.01	28.10	29.64	36.25	46.82	65.31	67.97	54.11	48.87	57.21	73.29	91.09	93.04
DEU	Stock market turnover ratio (%)	103.09	125.74	75.78	79.82	65.73	85.42	122.96	135.43	120.51	118.15	146.01	173.70	173.33	183.39
GRC	Domestic credit to private sector (% of GDP)	30.28	31.28	32.43	34.38	41.70	47.40	57.41	61.00	64.77	70.79	79.59	85.24	93.91	97.41
GRC	Liquid liabilities to GDP (%)	53.91	56.14	56.17	54.71	55.33	55.90	73.05	86.74	79.80	78.68	85.22	88.45	91.78	101.29
GRC	Stock market capitalization to GDP (%)	12.47	14.65	20.44	41.03	103.22	115.35	74.39	54.67	48.93	53.09	56.32	67.46	80.10	55.36
GRC	Stock market total value traded to GDP (%)	4.37	5.11	10.38	24.38	85.93	103.73	49.94	21.99	17.69	18.80	22.60	32.94	43.70	31.15
GRC	Stock market turnover ratio (%)	37.44	40.97	76.42	84.39	137.28	66.27	38.69	31.15	40.90	35.94	48.27	60.88	61.94	25.47

Source: Author's elaboration on data from the Global Financial Development Database (GFDD)

Table 5A (continued). Disaggregated measure of financial development by country, period 1995-2007

Country	*Indicator Name*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
IRL	Domestic credit to private sector (% of GDP)	68.71	73.26	82.08	87.17	101.23	104.61	109.72	108.79	113.78	133.37	159.91	181.04	200.15	221.64
IRL	Liquid liabilities to GDP (%)	58.43	68.81	69.75	71.90	75.74	77.97	77.50	76.20	78.08	82.39	87.61	93.95	98.21	107.23
IRL	Stock market capitalization to GDP (%)	52.81	40.63	50.34	64.14	67.98	72.39	73.73	57.08	49.65	55.64	56.56	62.40	62.65	39.58
IRL	Stock market total value traded to GDP (%)	13.03	16.95	17.06	32.69	46.75	30.32	17.31	22.97	26.32	24.87	26.93	32.59	43.22	35.69
IRL	Stock market turnover ratio (%)	46.37	40.70	39.68	74.99	77.02	20.46	29.03	46.80	55.77	42.68	56.41	57.44	84.42	35.87
ITA	Domestic credit to private sector (% of GDP)	55.89	54.27	55.04	57.58	70.14	75.51	77.49	79.58	83.21	84.83	88.99	94.47	100.57	104.75
ITA	Liquid liabilities to GDP (%)	60.10	57.86	54.18	50.86	53.08	55.23	55.08	56.12	56.88	56.70	58.76	61.10	67.29	76.58
ITA	Stock market capitalization to GDP (%)	17.22	18.98	24.17	37.02	52.74	63.23	56.98	42.53	39.44	42.25	44.55	49.12	51.56	36.50
ITA	Stock market total value traded to GDP (%)	9.10	7.69	12.13	27.31	41.11	56.09	58.51	46.01	43.41	44.22	53.78	66.82	89.17	68.90
ITA	Stock market turnover ratio (%)	44.59	42.57	68.42	104.96	84.19	111.51	86.23	103.60	111.03	109.71	140.13	148.49	210.92	79.43
NLD	Domestic credit to private sector (% of GDP)	93.23	99.22	104.59	114.97	125.36	134.20	135.30	141.16	147.99	157.83	165.04	167.19	188.06	193.16
NLD	Liquid liabilities to GDP (%)	78.23	78.99	78.31	41.03	49.19	92.15	95.07	97.49	101.69	105.51	111.48	117.63	121.99	129.89
NLD	Stock market capitalization to GDP (%)	81.24	86.22	103.17	132.41	155.37	161.85	136.87	102.15	90.94	88.95	89.45	102.11	116.18	82.53
NLD	Stock market total value traded to GDP (%)	52.96	69.09	75.12	87.09	107.53	141.83	212.67	179.94	101.68	109.88	125.14	143.72	192.59	179.32
NLD	Stock market turnover ratio (%)	73.04	94.21	71.43	78.82	74.84	108.66	188.46	103.37	108.24	137.77	146.34	158.39	198.35	159.05
PRT	Domestic credit to private sector (% of GDP)	63.46	70.23	77.98	89.24	109.17	126.27	133.41	135.90	135.38	135.94	140.71	151.90	162.50	173.69
PRT	Liquid liabilities to GDP (%)	89.47	89.98	86.52	83.28	86.40	92.11	91.68	88.85	89.38	89.21	93.15	98.11	101.42	112.26
PRT	Stock market capitalization to GDP (%)	15.69	17.69	26.17	40.94	49.86	50.35	43.99	34.53	33.97	36.21	35.72	42.40	53.18	42.16
PRT	Stock market total value traded to GDP (%)	4.36	4.68	11.71	27.51	33.99	38.04	33.59	18.52	14.31	16.55	20.62	27.69	47.65	47.55
PRT	Stock market turnover ratio (%)	23.16	33.34	69.15	94.58	64.72	92.06	51.54	44.52	39.48	56.11	60.76	82.09	117.23	77.73
ESP	Domestic credit to private sector (% of GDP)	72.28	73.19	78.25	85.15	89.59	97.77	101.18	105.71	113.17	124.86	145.65	166.98	187.89	202.84
ESP	Liquid liabilities to GDP (%)	72.63	71.59	68.23	67.98	75.30	84.73	86.77	86.70	86.68	90.17	100.51	116.85	131.94	149.62
ESP	Stock market capitalization to GDP (%)	30.69	35.25	43.58	57.11	66.09	75.51	79.04	69.88	72.42	83.17	84.01	92.64	111.96	90.76
ESP	Stock market total value traded to GDP (%)	10.64	24.77	58.24	95.01	114.39	140.05	148.30	138.13	121.75	106.32	121.35	141.65	174.72	177.08
ESP	Stock market turnover ratio (%)	32.64	114.37	181.54	203.71	182.28	224.98	174.25	211.42	146.11	137.50	163.93	168.56	183.54	168.74
SWE	Domestic credit to private sector (% of GDP)	97.24	95.87	96.88	97.37	98.11	42.32	97.87	99.11	99.82	101.33	107.86	112.81	121.47	127.64
SWE	Liquid liabilities to GDP (%)	47.40	50.53	51.38	44.91	40.20	39.76	42.92	45.94	46.00	45.26	46.59	49.13	51.49	56.33
SWE	Stock market capitalization to GDP (%)	63.35	79.24	96.76	105.66	123.99	134.27	116.82	86.17	80.68	96.06	104.38	123.06	133.34	91.78
SWE	Stock market total value traded to GDP (%)	36.82	42.84	58.51	72.91	83.98	121.96	143.26	107.87	84.13	97.01	117.18	143.66	183.50	170.22
SWE	Stock market turnover ratio (%)	57.99	62.49	71.92	75.68	74.24	117.48	113.55	101.05	103.90	118.58	119.94	137.88	157.10	143.82
GBR	Domestic credit to private sector (% of GDP)	111.77	115.67	116.44	115.97	118.37	129.47	134.63	139.22	143.53	151.16	158.54	170.15	186.35	211.43
GBR	Liquid liabilities to GDP (%)	63.60	70.08	79.34	92.32	98.16	100.63	106.04	107.86	108.67	113.24	121.01	130.49	141.28	163.20
GBR	Stock market capitalization to GDP (%)	113.72	127.13	139.46	149.86	174.01	179.59	157.33	127.78	121.09	126.65	128.02	139.51	140.76	103.40
GBR	Stock market total value traded to GDP (%)	42.35	43.97	52.36	68.39	83.43	105.38	122.87	119.35	115.79	140.31	171.57	171.49	262.23	305.33
GBR	Stock market turnover ratio (%)	38.32	37.00	43.46	53.29	52.66	69.25	80.58	93.31	98.42	133.24	141.78	123.96	259.59	236.83

Source: Author's elaboration on data from the Global Financial Development Database (GFDD)

Table 6A. Standardized Financial Development Index by country, period 1995-2007

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Average
INDEXAUT	-0.32	-0.35	-0.39	-0.37	-0.41	-0.42	-0.43	-0.45	-0.43	-0.38	-0.28	-0.20	-0.14	-0.35
INDEXBEL	-0.50	-0.45	-0.41	-0.30	-0.26	-0.30	-0.31	-0.35	-0.36	-0.29	-0.20	-0.11	-0.02	-0.30
INDEXDEU	-0.25	-0.16	-0.23	-0.17	-0.11	0.03	0.15	0.15	0.06	0.05	0.14	0.26	0.34	0.02
INDEXDNK	-0.56	-0.53	-0.46	-0.37	-0.38	-0.06	-0.08	-0.17	-0.16	-0.09	0.06	0.15	0.27	-0.18
INDEXESP	-0.47	-0.23	0.05	0.26	0.33	0.57	0.51	0.55	0.37	0.37	0.55	0.74	1.01	0.36
INDEXFIN	-0.50	-0.48	-0.42	-0.31	0.02	0.40	0.38	0.23	0.11	0.13	0.27	0.42	0.63	0.07
INDEXFRA	-0.33	-0.38	-0.31	-0.32	-0.23	0.00	0.05	-0.03	-0.05	-0.01	0.02	0.20	0.35	-0.08
INDEXGBR	-0.08	-0.02	0.08	0.21	0.33	0.49	0.54	0.50	0.49	0.69	0.85	0.89	1.55	0.50
INDEXGRE	-0.67	-0.64	-0.53	-0.42	0.07	0.01	-0.25	-0.36	-0.38	-0.37	-0.28	-0.17	-0.08	-0.31
INDEXIRL	-0.42	-0.41	-0.37	-0.19	-0.09	-0.24	-0.25	-0.24	-0.21	-0.17	-0.06	0.04	0.19	-0.18
INDEXITA	-0.55	-0.56	-0.49	-0.33	-0.26	-0.10	-0.16	-0.19	-0.18	-0.17	-0.05	0.04	0.28	-0.21
INDEXNLD	-0.21	-0.19	-0.14	-0.17	-0.16	-0.04	-0.08	-0.15	-0.11	-0.03	0.00	0.07	0.35	-0.07
INDEXPRT	-0.52	-0.48	-0.34	-0.18	-0.15	-0.02	-0.13	-0.22	-0.24	-0.19	-0.15	-0.02	0.18	-0.19
INDEXSWE	-0.25	-0.18	-0.06	0.00	0.07	0.18	0.33	0.13	0.04	0.16	0.26	0.45	0.67	0.14

Source: Author's elaboration on data from the Global Financial Development Database (GFDD)